

# ARIZONA MEDICINE

Journal of ARIZONA MEDICAL ASSOCIATION

VOL. 8, NO. 8



AUGUST, 1951

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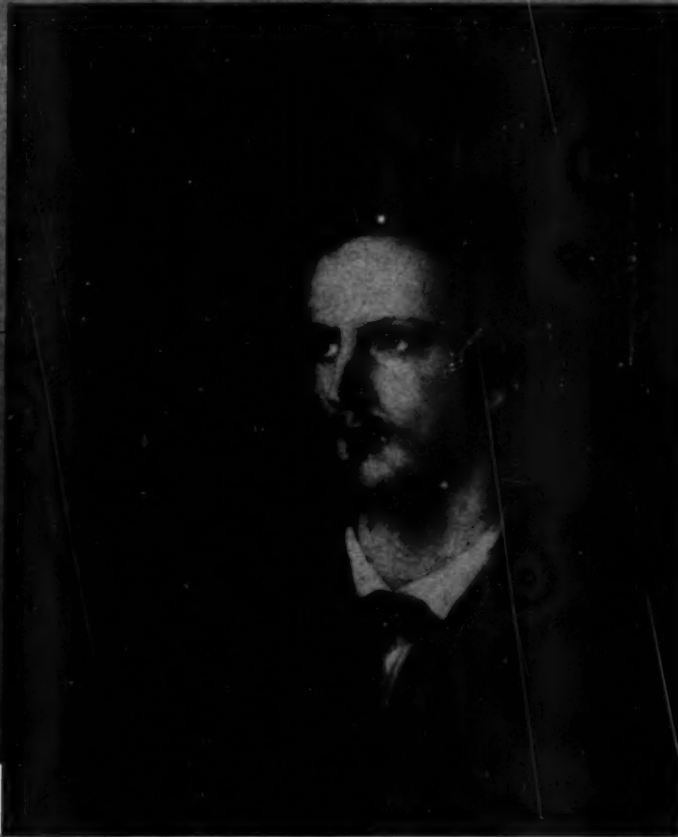
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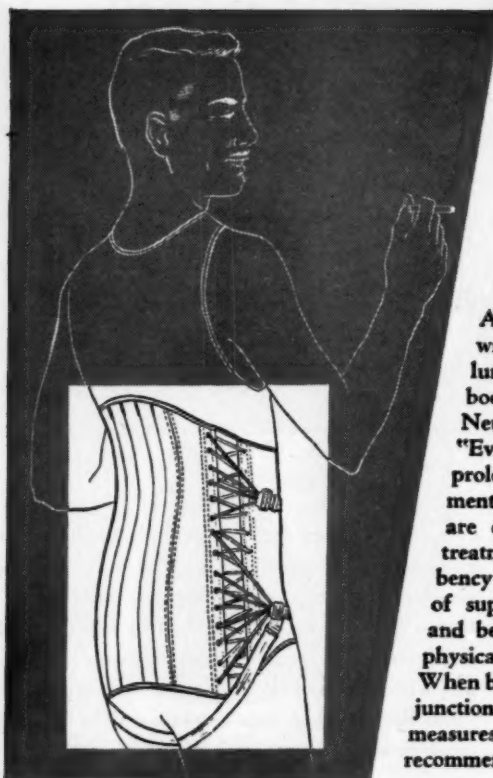
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*Chapter XXXIX, Page 580*

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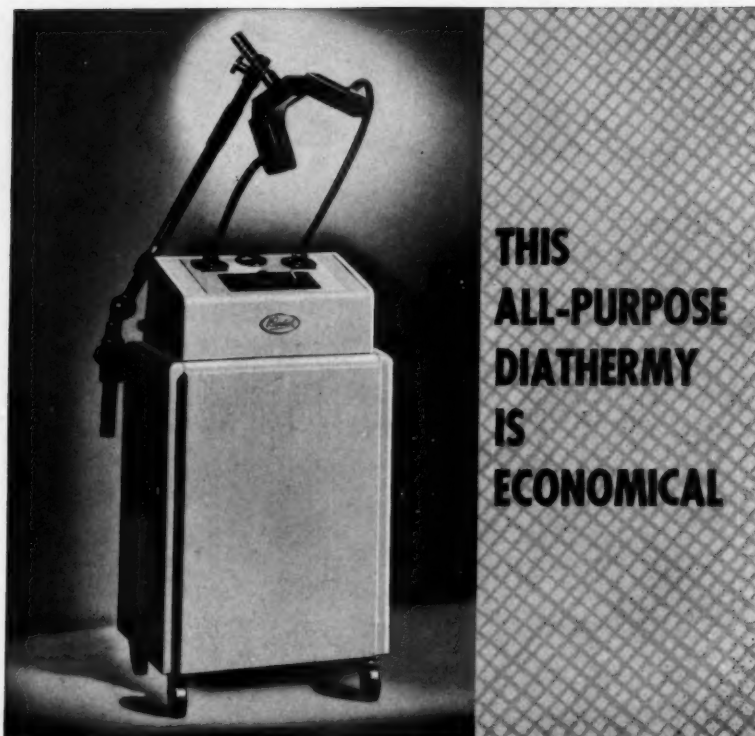
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1. Towse, R. C., Berberian, D. A., and Dennis, E. W.: *New York State Jour. Med.*, 50:2035, Sept., 1950.  
2. Berberian, D. A., Dennis, E. W., and Pipkin, C. A.: *Am. Jour. Trop. Med.*, 30:613, Sept., 1950.



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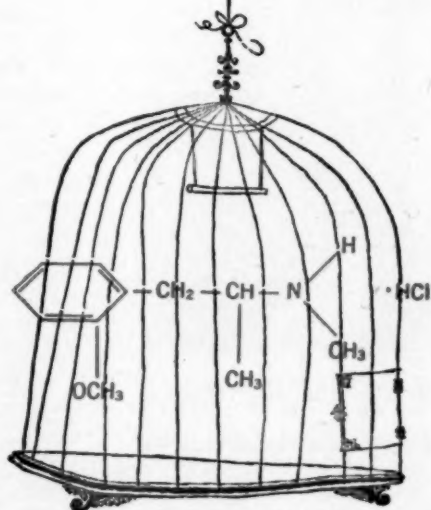
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*Glass, S. J., and Rosenblum, G.: J. Clin. Endocrinol. 3:95, 1943.*




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# ARIZONA MEDICINE

Journal of ARIZONA MEDICAL ASSOCIATION

VOL. 8, NO. 8



AUGUST, 1951

## ORIGINAL ARTICLES

### MEDICAL FUNGI

The infections and the allergies that they provoke

EDMUND L. KEENEY, M.D.

San Diego, California

There are many fungi capable of provoking disease in the human. Some of these fungi are purely saprophytic and, therefore, are referred to as nonpathogenic but these fungi are capable of producing disease in man even though they do not invade the tissues of the host. Spores of many of the nonpathogenic fungi are capable of acting as antigenic substances in a manner similar to pollens, thereby initiating the clinical symptoms of allergic rhinitis and bronchial asthma. Other fungi are parasitic and are spoken of as pathogenic fungi because they invade and destroy tissue.

The very nature of the mycotic infection to proceed slowly at first and then become accelerated would suggest that the causative fungi at first rely on dead or injured tissue to grow, that they have slight inherent invasive power and that they are able to spread only after some change has taken place in themselves or in their environment. There has not been any evidence to date that they increase in virulence with the progress of the infection. It is reasonable to assume, therefore, that during the course of the mycotic infection the tissues of the host become altered. This alteration in the tissues of the host may be due to the liberation of toxins by the fungi or to the development of hypersensitivity on the part of the host to the fungi or their breakdown products.

There are 4 classes of fungi. These are the Basidiomycetes, the Ascomycetes, the Phycomycetes and the Fungi Imperfecti. The class,

Basidiomycetes, comprise in part the large, fleshy fungi with compact mycelium, for example the mushrooms and the puffballs. There are, however, more minute forms included in this class and these are the plant parasites, the smuts and the rusts. The Ascomycetes are the largest class of fungi, including many plant pathogens as well as molds that are important to the bacteriologist. This class of fungi is characterized by the fact that spores are formed in a membrane or sac called the ascus. There are usually 8 spores in an ascus. The Fungi Imperfecti possess the characteristic mycelium of Ascomycetes and produce spores similar to those formed by the Ascomycetes yet they do not form ascospores or at least ascospores have not been demonstrated. The Phycomycetes are the most primitive class of the fungi. They develop loose, non-septate mycelium presenting a cotton-wool appearance. *Mucor* and *Rhizopus* are common examples. The molds of interest to the bacteriologist and the clinician fall, for the most part, into the class of Fungi Imperfecti. The rusts and the smuts of the Basidiomycetes and *Mucor* and *Rhizopus* of the Phycomycetes are exceptions. The class, Fungi Imperfecti, is divided into 3 orders and one order, the Hyphomycetales, includes most of the molds of medical interest.

#### *The Saprophytic Fungi as Excitants of Disease in Man*

The spores of some saprophytic fungi just as the pollens of trees, grasses and weeds are capable of setting off allergic reactions in the respiratory passages with the subsequent manifestations of rhinitis and bronchial asthma. The

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spore content of the indoor and outdoor atmosphere varies somewhat in concentration and in character depending upon climatic conditions. The concentration of the mold content of indoor atmosphere is higher in damp, warm and humid localities than in dry and warm or in dry and cold areas. The concentration of molds in the outdoor atmosphere is higher in the agricultural areas during the growing season of vegetation than it is along the coastal areas. The fact that climatic conditions affect the atmospheric concentration of the mold spore content has lead many investigators in Holland, Spain, Denmark, Sweden and this country to incriminate molds as causes for "climatic asthma." The mold spore counts of outdoor atmosphere have been studied in many sections of the United States at regular intervals since 1933. Regardless of where the mold spore counts have been made there is a certain uniformity in regard to the genera that are most prevalent. *Penicillium*, *Aspergillus*, *Hormodendrum*, *Alternaria*, *Mucor* and *Rhizopus* predominate in this country as well as abroad. It is generally conceded that *Penicillium* and *Aspergillus* and sometimes *Mucor* predominate mostly indoors, while *Hormodendrum* and *Alternaria* predominate outdoors.

The potentiality of mold spores as excitants of inhalant hypersensitivity is actuated by their buoyancy. The average diameter of such spores ranges from 3 to 5 microns, whereas the diameter of common airborne pollens varies from 15 to 40 microns. *Alternaria* and *Hormodendrum* spores, originating in Southern Minnesota have moved with air masses as far East as New York City and as far South as Oklahoma City in a period of only 24 hours. Aviators have recovered plant disease spores at altitudes of 18,000 feet. Furthermore it has been demonstrated that the spores of *Hormodendrum* may be carried in large numbers throughout large buildings within a few minutes after they have been liberated in a single room and that these spore enter in large numbers all of the rooms of the building in which air itself has had free access. These data serve to impress upon us the potential ubiquity of molds and their spores.

Sixty-six valid species of the genus *Aspergillus* and over 600 species of the genus *Penicillium* have been described. There are only a few mycologists in this country who are qualified to attempt identification and classification of the species of these genera. It for this reason

that no attempt is made to differentiate species of *Aspergilli* or of *Penicillia* in the conducting of mold surveys.

*Penicillia* are characterized by the production of conidia from sterigmata which are produced in clusters or whirls known as verticils. Verticils come off of short branches called metulae. Depending upon whether there are one or more metulae and whether or not they are arranged symmetrically or asymmetrically the *Penicillia* are classified.

The word *Aspergillus* means a special type of brush used for the sprinkling of holy water and the name of the genus has derived its origin from the fact that the conidia (spores) are arranged so as to resemble the appearance of a brush. The conidiophore, or the spore bearing portion of the mycelium, is made up of a foot-cell which is simply an enlarged mycelial cell, the stalk, the swelling at the end or the vesicle and the chains of conidia. Between the vesicle and the conidia are little stalks known as sterigmata. The conidia arise from the sterigmata. In some species of this genus secondary sterigmata come off of the primary ones and in these species the conidia arise from the secondary sterigmata. Mycelium and conidia may be colored and the color offers assistance in identification. *Aspergillus* and *Penicillium* species are found on a variety of substrates. They are abundant on soil and dried vegetable matter, such as hay and grains. Unlike *Penicillium*, *Aspergillus* tolerates high temperatures. Because of the abundant number of species of these genera the routine skin testing with a few isolated species of *Aspergillus* or of *Penicillium* acquired from some drug manufacturer is a demonstration of ignorance and folly on the part of the skin tester. If hypersensitivity to molds is suspected a study of the patient's own atmosphere and a preparation of extracts from those molds in his atmosphere is essential.

*Cladosporium* and *Hormodendrum* were at one time considered as names for two different genera. The name *Hormodendrum* unfortunately predominates over *Cladosporium* in the medical literature, even though *Cladosporium* by reasons of priority is the correct name for the genus. A small, dark, olive-green, velvet colony of *Cladosporium* is familiar to anyone who has manifested even a meager interest in molds. These molds are found in the soil, decaying leaves, straw and other vegetation. They are

considered to be of some importance in the spoilage of malt and of stored tobacco. *Cladosporium herbarium* is a species of this genus which is most commonly isolated. *Cladosporium pulvum*, the tomato mold, has caused asthma in green house tomato growers.

Members of the genus *Alternaria* form dark, olive-green or brown colonies similar to those of *Cladosporium* except that the colonies are looser and more woolly in type. Molds of this genus are characterized by the large multi-chambered spores which occur in chains and sometimes have segments of mycelium between them. Species of this genus, as the species of *Cladosporium*, are common plant pathogens. It is undeniable that these molds occur in the greatest multitude throughout the agricultural regions of this country and particularly in such areas they may act as excitants of inhalant allergy.

*Mucor* and *Rhizopus* are the two genera of the *Phycomycetes* that are of particular interest to the clinician and the bacteriologist. Both molds fill up a petri dish with mycelium but *Rhizopus* covers the agar rapidly, climbs up the side of the dish and attaches itself to the under-surface of the lid by holdfasts which are also known as Rhizoids.

*Rhizopus nigricans* is by far the most common of all molds belonging to the class *Phycomycetes*. It is a common air contaminant and important in the spoilage of fruits, especially stored sweet potatoes. Strawberries are also susceptible and the fungus is responsible for the disease known as leak causing softening and dripping of the fruit.

There are many species of *Mucor*. They are frequently referred to as the bread molds and are found abundantly in the soil, in manure, in starchy food stuffs and on fruit. Along with the *Rhizopus* they give rise to loosely meshed aerial mycelia which may be grey or white in color.

The smuts and rusts belong to the class of *Basidiomycetes* and are plant parasites. Nearly everybody is familiar with the appearance of an ear of corn that has been affected with the corn smut, *Ustilago Leae*, and the disease of wheat known as black stem rust which is caused by the rust *Puccinia graminis*. Other grains are similarly affected by rusts and smuts and the spores of these plant parasites are capable of

producing allergic reactions in the respiratory passages.

There is the possibility that molds represent at least a part of the protein content of crude house dust and an attempt is being made by several workers in this country and abroad to determine the role of mold hypersensitivity in patients with so-called house dust sensitivity. The colossal amount of work and knowledge that is required to shed light upon the role of fungi as excitants of inhalant allergy is enough to dim the enthusiasm of even the most ardent of investigators, and it is perhaps for this reason that our understanding in its regard is still so very limited.

#### *The Pathogenic Fungi*

The pathogenic fungi are *Fungi Imperfecti* belonging to the order of *Hyphomycetales* and for the sake of clarity and convenience may be divided into two groups, that is those producing superficial infections and those producing deep-seated infections. The various superficial mycotic infections will be discussed together under the heading of "Dermatophytosis" and the deep seated mycotic infections will be taken up individually.

#### *Dermatophytosis*

Dermatophytosis is a more or less superficial infection of the skin, the hair and the nails caused by anyone of the fungi known as the dermatophytes. The fungi included in the genera of *Trichophyton*, *Epidermophyton*, *Microsporum* and *Candida* (*Monilia*) are referred to as dermatophytes. These parasites may infect many different body regions and have a wide range of morbid anatomical expressions. It is because of these two latter characteristics that so many confusing terms have invaded the literature. *Tinea* which means "worm" precedes *pedis*, *capitis* and *cruris* on occasions to denote the region of the body infected and then on other occasions is used before *circinata* and *imbricata* to describe an anatomical expression of the infection. Only one or two species of each of the genera referred to above are of clinical importance. *Trichophyton mentagrophytes* and *Trichophyton rubrum* commonly infect the skin and the nails of the feet. *Epidermophyton floccosum* commonly infects the skin of the groin. *Microsporum audouinii* and *Microsporum canis* commonly infect the hairs of the scalp in children. *Candida albicans* which may also produce deep seated lesions commonly infects the



mucus membranes of the mouth (thrush) and the vagina.

**Diagnosis.** The matter of making a clinical diagnosis of dermatophytosis is ordinarily not difficult. Occasionally chemical dermatitis and contact dermatitis simulate dermatophytosis. Furthermore, bacteria may produce lesions on the feet similar in characteristics to those produced by the fungi. Therefore, because the diagnosis of fungous infection cannot be made with certainty in all cases on clinical grounds alone, the laboratory evidence of the presence of a dermatophyte by microscopic examination or by culture is essential in a scientific study of a skin affection where dermatophytosis is suspected. The dermatophytes are present in the skin and in the hair as continuous or fragmented hyphae. The demonstration of hyphae by microscopic examination of material from the infected areas is sufficient to make a diagnosis of dermatophytosis. On Sabouraud's agar the dermatophytes produce a characteristic sporulating mycelium.

The material to be studied must be collected properly. A scalpel should be used to obtain scrapings of skin from lesions on the toes and in the groin. The active edge and not the center of the lesion should be scraped because fungous infections heal from the center and if the hyphae are to be found they will be located in the periphery of the lesion. If the lesion is vesicular the roof of the vesicle should be completely removed with scissors and if the hair is affected an affected hair should be epilated with forceps. The specimen for examination should then be placed on a slide and covered with 10 per cent sodium hydroxide. Several hours must elapse to allow the sodium hydroxide to clear the specimen before making the microscopic examination.

It is desirable also to culture material from infected areas. Skin scrapings, or the roof of a vesicle, or an infected hair should be planted on Sabouraud's agar and incubated at 30 degrees C. The identification of the fungus by its growth and microscopic cultural characteristics should be attempted only by an experienced mycologist. The isolation and classification of the fungus is an academic nicety but is not essential for the proper treatment of the patient.

It is important to discuss the value of skin tests in diagnosing dermatophytosis. Once the

body has become infected by a fungus certain alternations occur which affect the reactivity by the tissues toward subsequent contact with the fungus or the protein of the fungus. This altered reactivity that results from infection is spoken of as "bacterial hypersensitivity", "hypersensitivity of infection", or "tuberculin type hypersensitivity". It is quite possible that an anaphylactic type of hypersensitivity to the fungus or fractions of the fungus may also develop.

Trichophytin as it is made available on the commercial market has very limited assets. To perform the test 0.1cc of a 1-30 dilution of Trichophytin (Lederle) is injected intradermally and interpreted in the same manner as a tuberculin test. A positive test only indicates that at some time in the immediate or distant past the host has been infected with one or more of the Trichophyton fungi. A negative test is of some help in ruling out the presence of an infection with the Trichophyton fungi but it must be remembered that the fungi vary in their ability to sensitize and that fungous infection without skin sensitivity to Trichophytin is possible. Then, too, the infecting organism may not produce antibodies that will react with the commercial Trichophytin, that is, there may be a lack of specificity due to the genus and the species of the infecting organism. Although the immediate whealing reaction to Trichophytin has been observed and does definitely occur there has been little thought of its significance. The immediate reaction can be assumed to be an indication of the presence of anaphylactic hypersensitivity and it may be that the development on the part of the host of anaphylactic hypersensitivity explains its aptitude to develop concomitantly with the fungous infection such clinical manifestations of anaphylactic hypersensitivity as urticaria, purpura, migrating phlebitis, erythema nodosum and papular and eczematoid eruptions. Any of these various eruptions may or may not occur with dermatophytosis and are usually spoken of as trichophytids.

The Trichophyton fungi play a role in the development of "spontaneous" allergic manifestations to penicillin. It has been fully demonstrated that several strains of Trichophyton mentagrophytes elaborate antibacterial substances similar in some respects to penicillin. This fact may or may not be of significance in explaining these "spontaneous" allergic eruptions to peni-



cillin because there is increasing evidence that previous occurrence of fungous disease accounts for this type of penicillin sensitivity. The skin reaction to the intradermal administration of penicillin (2,000 units) in these individuals resembles in time of development and appearance a Trichophyton reaction and this delayed reaction to the cutaneous test with penicillin is of practical importance as an aid in the diagnosis of the "spontaneous" type of reaction. The clinical manifestations of this spontaneous sensitivity to penicillin characterized by an erythematopapulovesicular eruption which tends to localize first on the hands, the feet and in the groin and then spread over the body, must not be confused with the serum-sickness type of reaction which is induced by treatment with penicillin.

Odiomycin is a broth filtrate of *Candida albicans*. As it has been made available to the medical profession it has no value in the diagnosis of infections due to *Candida albicans*. The term Odiomycin is as inexact as the material which bears the name. The microorganisms that are now rightfully classed in the genus, *Candida*, have been referred to as belonging to the genera of *Oidium* and *Monilia*. Such clinical manifestations of anaphylactic hypersensitivity as eczematoid dermatitis and bronchial asthma may develop during an infection from *Candida albicans*. Certain cases of miliaria are thought to be a hypersensitive manifestation of infection from *Candida albicans*. In the instance of miliaria and eczematoid dermatitis, the focus of infection has been described to be intestinal. A case of bronchial asthma that was recently reported followed a bronchial infection with *Candida albicans*.

The fact that hairs infected by *Microsporum dermatophytes* fluoresce under filtered ultraviolet radiation is frequently used as an aid in the diagnosis of fungous infections of the scalp in children. Inexpensive units for the production of filtered ultraviolet radiation are available on the commercial market. These units are commonly referred to as "Wood's lights", being named for their inventor, Dr. Robert Wood, Emeritus Professor of Physics at the Johns Hopkins University.

**Treatment.** A compound to be effective in the treatment of dermatophytosis must first possess the power to inhibit the growth of fungi or actually kill the fungi. Secondly, it must be able to penetrate the stratum corneum and

come into contact with the fragments of hyphae that are embedded there. Thirdly, the compound should possess an antibacterial effect because essentially every infection is complicated by secondary bacterial infection and the hypersensitive reaction to this bacterial infection. Fourthly, the compound and the vehicle in which it is placed should be neither irritating nor sensitizing.

As the result of investigations carried out during the last War two preparations which satisfy the above qualifications were developed. These preparations now generally familiar are made commercially available under the trade names of "Desenex" and "Sopronal". There is essentially no difference in the clinical effectiveness of these preparations and either preparation is satisfactory for the treatment of dermatophytosis of the feet, the groin and the smooth skin and is an improvement over any one method of treatment that has been formerly employed. In this respect the treatment of dermatophytosis has been fairly standardized. For the treatment of dermatophytosis of the feet either ointment should be applied over the toes, between the toes and under the toes every night. The following morning the ointment should be removed with soap and water or with a towel and the feet dusted with either "Desenex" or "Sopronal" powder. Some of the powder should be dusted into the shoes. Therapy must be continued until the lesions have completely healed and then continued for several weeks thereafter. It is important, furthermore, to stress that the use of keratolytic agents, the procedure of opening widely vesicular lesions on the soles of the feet and the use of warm potassium permanganate (1-3000) soaks for acute eczematoid lesions should not be lost sight of and must supplement the use of either "Sopronal" or "Desenex" therapy.

For the treatment of dermatophytosis of the groin or smooth skin either ointment should be applied every night and every morning. The ointment should also be applied on the normal skin immediately surrounding the infected area. The treatment must be continued for approximately one week after the lesions have completely healed.

To date the only completely satisfactory method of treating dermatophytosis of the hairs of the scalp has been x-ray epilation. This treatment must be administered by an expert.

The development of the fatty acids as inhibitors of pathogenic fungi promises also to lend assistance in the treatment of infections due to *Candida albicans* and their employment in the management of infections due to this organism will be discussed later under the heading *Candidiasis*.

#### *Actinomycosis*

Actinomycosis (Fig. 1) is the most common, the most readily recognized and the most widely distributed of the severe systemic mycoses. The term actinomycosis does not refer to one specific disease caused by one specific organism. The term does, however, indicate an infection due to an actinomycete.

In human infections 90 per cent are caused by the anaerobic *Actinomyces bovis*, while only 10 per cent are caused by the anaerobic *Nocardia* species. The course of the disease, the diagnosis and the treatment are essentially the same for both types of infection. The mode of infection and transmission has not been firmly established. It is commonly taught that the habit of chewing straw leads to infection but *Actinomyces bovis* has never been isolated from vegetation. On the other hand the organism is known to be commonly present in and about carious teeth, in dental scum and in crypts of tonsils and it is reasonable to assume that the infection disseminates from these areas. Located in such regions the organisms are in strategic positions to invade locally the jaw giving rise to cervical actinomycosis, to be aspirated into the lungs to initiate a pulmonary infection, and to be swallowed to infect the intestines and the abdominal organs.

Clinical manifestations of actinomycosis, therefore, fall into three categories, depending entirely upon the region of the body affected. The cervical-facial region is the most frequently involved comprising about 60 per cent of the cases. The thoracic and abdominal regions are involved next in frequency and comprise, together, about 40 per cent of the cases. The cervical-facial type of infection usually remains localized and responds very favorably to treatment. In the thoracic and abdominal types of infection the prognosis is not so favorable.

Pulmonary infections with actinomycetes are usually bilateral and basal, but they may occur as a unilateral lesion in any part of the lung. Sometimes the infection may begin in one or more ribs and invade from there the lung and

the subcutaneous tissue. From the lung the infection usually extends to the pleura producing pleural pain and occasionally pleural effusion, but more frequently the fungus invades directly through the pleura to the chest wall giving rise to numerous draining sinuses. As the disease progresses the patient becomes anemic; there is a leucocytosis; the sedimentation rate is increased; there is a spiking type of temperature; and the patient presents numerous signs of a severe pulmonary disease. Dysphasia may occur from an extension of the infection into the mediastinum.

In the abdominal type of actinomycosis the primary lesion is often in the appendix and in all cases there are draining sinuses. At autopsy abscesses are frequently found in the liver.

The diagnosis is established by finding in sputa or pus the organism in the form of very characteristic "sulfur granules". These granules vary in size, have a radiating lobulated structure and are usually yellow in color. They are best observed with a low power microscope lens, but occasionally are large enough to be identified with the naked eye or with a hand lens. The interior of the granule does not stand out sharply but the clubs of the periphery are very refractile and appear as irregular lines marking the borders of the lobules. By crushing the granule between two slides and then staining with Gram's stain the Gram positive branched filaments can be demonstrated. These branched filaments make up the interior of the "sulfur granule". The *Nocardia* species do not commonly produce granules and because the small filaments are frequently acid-fast there may be difficulty in differentiating the stained organism from the tubercle bacillus. In contrast to the tubercle bacillus, treatment with sodium hydroxide kills the acid-fast actinomycetes. This fact is of practical importance in differentiating actinomycosis due to an acid-fast actinomycete and tuberculosis because guinea pigs fail to develop lesions following the injection of sputum containing acid-fast actinomycetes which has been treated with sodium hydroxide.

*Actinomyces bovis* is difficult to culture. Pus or sputum should be washed several times with sterile normal salt solution. Suspected granules should be recovered with a bacteriological loop, washed again in sterile normal salt solution and then placed in Brewer's media and incubated at 37°C. The colonies that gradually develop

appear as fluffy masses of mycelium suspended in the media. In addition to inoculating anaerobic media for the isolation of *Actinomyces bovis* a veal infusion agar containing 1 per cent glucose should be inoculated in an attempt to recover the anaerobically growing *Nocardia* organism. This species of actinomycete is not so difficult to isolate and will grow rather quickly on this media.

The treatment of actinomycotic infections is not altogether satisfactory. There are now numerous clinical notes in the literature proclaiming the effectiveness of sulfonamides and penicillin. In the majority of these reported cases, surgical measures, intensive iodide therapy and x-ray therapy supported the penicillin and sulfonamide therapy so that it is impossible to ascribe the entire clinical improvement of many of these reported cases to the action of either of the antibacterial drugs. More recently aureomycin has been reported to be effective in the management of actinomycosis due to *Actinomyces bovis* and just recently we have treated in the same manner with encouraging results a patient with actinomycosis due to *Nocardia asteroides*. Dr. Milton Huppert tested the sensitivity of the organism against various sulfonamides, streptomycin, dihydro-streptomycin, chloromycetin, penicillin, bacitracin, sodium iodide and aureomycin. Dr. Huppert clearly demonstrated that the organism was sufficiently sensitive to aureomycin to merit treatment with this antibiotic substance. A clinical report by Dr. Huppert and myself pertaining to these studies will soon be forthcoming in the medical literature. It must be concluded, therefore, that necessary surgical intervention, adequate x-ray therapy and intensive iodide administration are usually essential adjuncts to sulfonamide, penicillin and aureomycin therapy if optimal results are to be obtained in the treatment of this serious chronic mycotic infection.

#### *Coccidioidomycosis*

Coccidioidomycosis (Fig. 2) caused by *Coccidioides immitis*, produces two different clinical types of infection. The primary form of the disease, which is an acute but benign self-limiting respiratory disease, occurs by the tens of thousands in the arid regions of the Southwestern portion of the United States. It has been demonstrated that coccidioidomycosis is an endemic disease of rodents in the arid regions of the Southwest; that the organism is present

in the dust and soil of these areas; and that it gains entrance into the human body by dust particles through the respiratory tract, or more infrequently into the skin following injury to the skin. Quite often individuals living in the endemic area become infected without manifesting any clinical evidence of the disease. Furthermore, the lesions heal and confer upon such individuals immunity against subsequent infection.

The symptoms of primary pulmonary coccidioidomycosis resemble the signs and symptoms characteristic of many acute but mild respiratory infections. There is usually fever accompanied by a cough with pains in the chest, chills and sore throat. The sputum is scanty and rarely contains blood. The incubation period varies from 1 to 3 weeks. The physical findings referable to the lungs are usually not very revealing, but occasionally there may be some change in the breath sounds. Eight to 14 days following the onset of the infection hypersensitive reactions, such as erythema nodosum, erythema multiforme and arthralgia may occur. Roentgenograms of the lungs during the primary infection may reveal fan shaped densities extending out from the enlarged hilar nodes. There may or may not be definite parenchymal lesions. At times soft infiltrations occur throughout the lungs. Pulmonary cavities are not common during the first stage of the disease but when they do occur they may persist for a period of years without any deleterious effect to the patient.

Approximately one per cent of the primary cases develop into the progressive form of coccidioidomycosis, which is a chronic malignant disseminated disease involving the cutaneous, subcutaneous, visceral and bony tissues. The symptomatology of the progressive infection depends entirely upon the site to which the fungus has migrated. If the lung infiltrations persist for a period of more than 6 weeks a progressive form of the disease should be suspected. The pulmonary infiltrations increase in amount and there is enlargement of the mediastinal glands. Cavities may enlarge and the sputum becomes muco-purulent and occasionally tinged with blood.

If the progressive form of the disease is suspected the entire skeleton should be x-rayed. Typical lesions in the bones appear as sharply circumscribed areas of destruction with scarcely



any reaction in the surrounding bone. Although any bone in the body may become involved the ribs, the vertebrae, small bones of the hands and the tibia are most frequently invaded in the order named. Dissemination also affects the joints and involvement of the ankle joint for an unknown reason frequently occurs. The wrists and the elbow joints are next most commonly involved in the order enumerated. In white patients meningitis is quite frequent and the course simulates that of tuberculous meningitis. In the dark skin races there is more of a tendency to the development of subcutaneous and joint abscesses.

Laboratory studies are helpful in making a diagnosis of coccidioidomycosis. In the primary form of the disease the sedimentation rate is increased; there is an increase in the percentage of circulating eosinophils; there is frequently a leucocytosis; and the skin test with coccidioidin is usually positive. Precipitins and complement-fixing antibodies are negative in mild cases of the primary form, but become positive in the severe infections. As recovery becomes manifest the precipitin and complement-fixing antibodies disappear. In the progressive form of the disease the skin test with coccidioidin is usually positive but becomes negative in the terminal phase of the disease. The precipitins and complement-fixing antibodies are present in high titers.

The organism, *Coccidioides immitis*, exhibits marked dimorphism. It grows on agar as a white cotton mold which pigments with age. Old cultures contain myriads of very large, thick walled arthrospores spoken of commonly as chlamydospores. These spores which are particularly adapted for maintaining vitality through long period of dormancy are considered to be the infective form of the fungus occurring in nature. When these spores are injected into animals they become spherical and enlarged. These large spherical cells commonly referred to as "spherules" gives rise to endospores by cleavage of their cytoplasm. The endospores escape when the wall of the "spherule" ruptures to repeat the parasitic phase of the life cycle. It is the "spherule" that is found in the sputum of the patient infected with *Coccidioides immitis*.

There is no specific form of treatment for coccidioidomycosis. A strict regime of bed rest is the best method of effecting a cure. In other

words, the patient should be treated as though he had tuberculosis and should remain in bed until he has clinically recovered; until the x-rays have revealed the lesions to be regressing; and until the sedimentation rate has returned to normal.

The prognosis in the primary form of the disease is excellent but in the progressive form is very grave. The mortality rate is given as 60 per cent, but it is probably much higher as the primary benign type of the disease was not differentiated from the severe progressive form of the disease in the early reports of the literature.

### *Blastomycosis*

Blastomycosis (Fig. 3) is a relatively common mycotic disease, characterized by the formation of granulomatous lesions in various parts of the body, but with a marked predilection for involvement of the skin, lungs and bones. Blastomycosis occurs with the greatest frequency in the Mississippi Valley, across Tennessee into North Carolina and down into the Southeastern States. Dr. T. C. Gilchrist, a dermatologist of Baltimore, first described the disease and later named the causative fungus, *Blastomyces dermatitidis*. The fact that Dr. Gilchrist was primarily interested in cutaneous medicine is manifested by the appendage which he coined for the genus *Blastomyces*. Actually the name Blastomycosis is doubly a misnomer. It was first thought that the causative organism was a true yeast and secondly that *Blastomyces* was the proper scientific name for the yeasts. However, the organism is not a true yeast and *Saccharomyces* is the proper scientific name for the yeasts.

Blastomycosis is not spread from man to man but evidently is derived from some source in nature. Infections may occur in patients of any age but the disease does occur nine times as frequently in males as in females. The infection may begin primarily in the skin and remain localized for months or years before it spreads to the internal organs. In the majority of the cases the primary lesion appears on the skin of the face, the hands, the wrists or the forearms. There appears first a firm papule and about this a number of secondary nodules develop which gradually enlarge and coalesce. These lesions break down and discharge purulent material from their centers. As the lesion progresses there develops a large elevated mass of tissue with an irregular ulcerated surface



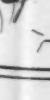
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CEREBRAL



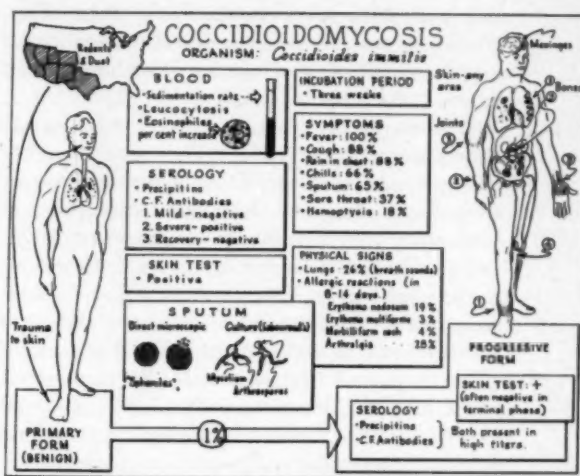


FIGURE 1

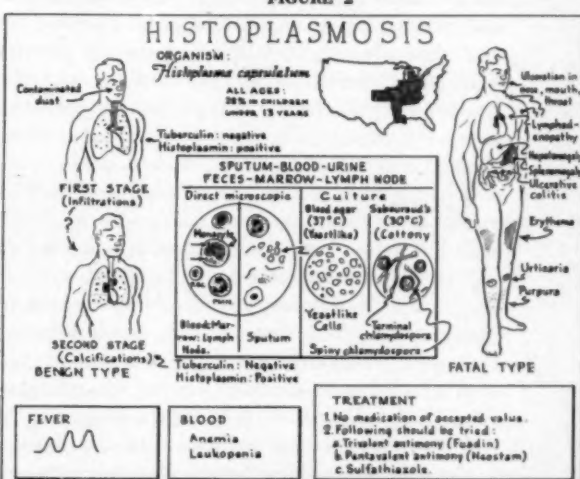


FIGURE 4

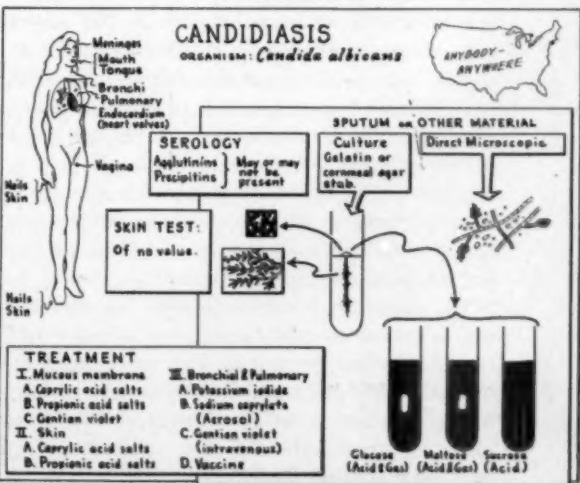


FIGURE 6



that resembles somewhat a tuberculous ulcer. Healing occurs first in the central portion of the lesion and is followed by the formation of scar tissue.

Most cases of systemic blastomycosis begin with pulmonary infection. The onset is rather insidious and the symptoms resemble those of an ordinary subacute respiratory tract infection with a dry cough, some pain in the chest, slight fever and mild shortness of breath. As the infection progresses the shortness of breath is accentuated, the fever becomes higher and there is loss of weight and strength. Roentgenograms of the lungs reveal enlargement of the mediastinal lymph nodes. Dense masses are often observed located near the hilum and project into the lung fields with irregular outlines. The observance of such a hilar mass may suggest a bronchogenic carcinoma. The mediastinum frequently becomes invaded in the latter stages of the disease with involvement of the pericardium and the heart. The infection may disseminate from the lungs by way of the blood stream and when disseminated blastomycosis is suspected x-rays should be taken of the entire skeleton. The ribs and the vertebrae are most frequently involved, and the latter may be destroyed resulting in collapse with compression of the spinal cord. It is difficult to differentiate the bony lesions of blastomycosis from those seen in coccidioidomycosis and actinomycosis. The abdominal viscera also become involved in the disseminated form of the disease with abscesses appearing in the liver, spleen and kidneys. As the disease progresses the sedimentation rate becomes increased and there is a hypochromic anemia and a leucocytosis with an increase in the percentage of polymorphonuclear leucocytes.

Skin tests with a vaccine prepared from the yeast phase of the organism are positive in most of the extensive skin cases and in all of the systemic cases. Serological tests are not always reliable. Complement-fixating antibodies are ordinarily present in the systemic cases but a negative complement-fixation test does not rule out the presence of the disease.

The diagnosis is established by demonstrating the organism in pus or sputum. In the body tissues the fungus occurs only as a round or oval yeast-like cell which reproduces by budding. These cells are easier to demonstrate if the material for examination is first treated with 20 per cent sodium hydroxide. The finding of

doubly contoured budding cells with granular contents and which in size are slightly smaller than leucocytes makes the diagnosis certain. Cultures should be made on both Sabouraud's and blood agar media. On Sabouraud's agar the colonies first appear smooth and greyish, but soon become wrinkled and finally a white cottony growth develops. Cultures on blood agar incubated at 37° C. do not develop a filamentous growth but remain yeast-like in appearance.

If the patient's infection is confined to the skin and if the lesion is small and readily accessible surgical removal of the lesion is advisable. If, however, the skin lesion is not suitable for surgical excision x-ray therapy in addition to large doses of potassium iodide should be recommended. In the patient with pulmonary blastomycosis, with or without dissemination, considerable care should be given to the plan of therapy. Administration of iodides to patients hypersensitive to blastomyces vaccine frequently causes an extension of the infection. Skin tests with blastomyces vaccine should be performed on every patient before iodides are administered. If the skin tests produce an area of erythema and induration 2 cm. or larger in diameter the concentration of the vaccine should be diluted a thousand or ten thousand times depending entirely on the degree of the skin reactivity. Desensitization treatment should be started with 0.1cc. of the diluted vaccine and this does increased by 0.1cc. Treatment should be given 3 times weekly and finally when a dose of 1cc. has been reached the procedure should be repeated, beginning with a 0.1cc. of the next lowest dilution and so on until undiluted vaccine is administered. If local reactions to the vaccine should occur the dose should be reduced and the highest dose which just fails to produce a local reaction should then be maintained without further attempt to increase the dosage. Iodide therapy may be started after 3 weeks of desensitization treatment. The dosage of potassium iodide should be increased gradually. Five drops 3 times daily is a safe beginning dosage and this amount should be increased only 1 drop a day until a maximum of 20 drops 3 times daily has been given. This dose can be maintained. On the other hand if the patient fails to give a positive skin reaction to blastomyces vaccine or gives a reaction less than 1 cm. in diameter the iodides may be administered rapidly, the initial dose being 5 drops 3 times a day with an

increase of 3 drops each day until approximately a maximum dosage of 60 drops 3 times a day are given. If larger doses can be given this is advisable and it is wise to administer the largest dose which the patient can tolerate without signs and symptoms of iodidism. Sodium iodide intravenously, in doses of 1 gram once or twice daily, may be used to supplement the oral potassium iodide therapy. Ethyl iodide administered by inhalation is also frequently effective. In regard to this route of iodide administration it is suggested that 0.25cc. of ethyl iodide be inhaled 3 times daily. The dose may be increased by 0.25cc. every 3 to 4 days until the patient is taking as much as 1cc. 3 times daily. Inhalation therapy may be combined with the oral or the intravenous route of administration. Surgical drainage is indicated where there are large accumulations of pus. Here again better results are obtained in the hypersensitive patient if surgical drainage is deferred until desensitization therapy has been accomplished. X-ray therapy is a useful adjunct for the treatment of pulmonary blastomycosis. The doses should be smaller than those used for neoplasm of the lung and should be given while the patient is receiving iodides. X-ray therapy should not be given to the hypersensitive patient, however, until some degree of desensitization has been accomplished.

#### *Histoplasmosis*

The disease, histoplasmosis (Fig. 4), was first discovered in the Panama Canal Zone by Darling in 1906. Darling, originally believed the causative organism was a protozoan and, therefore, gave it the name *Histoplasma capsulatum* and accordingly named the disease histoplasmosis. It was not until 1934 that De Monbreum proved that the causative organism was a fungus. De Monbreum then proposed to change the name of the fungus and the name of the disease because of Darling's misconception, but since Darling created a new generic and a new specific name for the parasite such a change is not warranted. In 1939 De Monbreum suggested that a relatively mild and non-fatal form of the disease might exist which was similar in nature to the primary and non-fatal form of coccidioidomycosis. From that time to date there has been a certain amount of interest in this mycotic infection.

It was soon demonstrated that there was some association between histoplasmin sensitivity and

pulmonary calcification occurring in tuberculin negative reactors. Subsequent investigation conducted for the most part under the auspices of the United States Public Health Service indicated that the greatest number of individuals with positive histoplasmin tests resided in the states of Tennessee, Kentucky, Arkansas, Missouri, Indiana and parts of Ohio, Illinois, Kansas and Louisiana. It was only natural to postulate that these pulmonary calcifications in individuals with positive histoplasmin skin tests and negative tuberculin skin tests represented a primary benign form of the disease histoplasmosis. Studies in school children in Kansas City lent further evidence in the growing chain of knowledge that pulmonary infiltrations were distinguishable from tuberculous infiltration and probably represented the first stage of the benign type of infection, and that these infiltrations were the fore-runners of the pulmonary calcifications that had been noted previously. Furthermore, the strength of the circumstantial evidence was enhanced by the isolation of *Histoplasma capsulatum* from one of the Kansas City children possessing pulmonary infiltrations. The pathogenic process now has been followed from the negative roentgenogram of the lungs and negative histoplasmin skin reaction through the appearance of parenchymal infiltration with concomitant development of histoplasmin sensitivity to the final calcified foci in the lungs associated also with histoplasmin sensitivity.

The portal of entrance of the organism was purely speculative until 1949 when it was demonstrated that *Histoplasma capsulatum* was present in the soil and the rodents of the endemic area. It might then be postulated with some reservation that the organism enters the respiratory tract with dust particles in the manner identical to that of *Coccidioides immitis*. The fatal type of the disease presents a dissimilar picture from the benign primary type. At this time it is attempting to speculate in regard to the surprisingly few instances of progressive pulmonary histoplasmosis in view of the many cases of primary pulmonary infections. Perhaps the form of the organism which is inhaled is less virulent than the form which enters the body through the mouth and intestinal tract.

The clinical picture is usually that of emaciation, weakness, septic fever, anemia, leukopenia, splenomegalia and hepatomegalia. Occasionally there is ulcerative colitis and lymphadenopathy.

Manifestations of hypersensitivity such as erythema, urticaria and purpura may develop. Ulcerations in the nose, mouth and throat have been described.

The fungus in its parasitic phase is a small yeast-like organism ranging in diameter from 2 to 3 microns. These yeast-like bodies resemble closely the Leishman-Donovan bodies of kala-azar and invade the mononuclear cells in enormous numbers. Whenever the diagnosis of histoplasmosis is suspected the mononuclear cells of the circulating blood and the bone marrow should be examined carefully under an oil immersion lens for the intracellular bodies. If there is enlargement of the lymph glands a biopsy should be studied. In sputum the yeast-like bodies are extracellular. Cultures taken from blood, urine, feces, lymph nodes or sputum should be placed on both agar and Sabouraud's media. On Sabouraud's agar the organism produces a white cottony growth. Spores ranging in size from 10 to 25 microns are produced and from these spores rise finger-like projections 5 microns in length. The growth on blood agar is yeast-like. The organism, therefore, grows on Sabouraud's and blood agar media in a manner very similar to growth on the same media of *Blastomyces dermatitidis* and it is difficult to differentiate the two by their growth cultural characteristics. Further interest is lent to the problem with the realization that there are immunological cross reactions with *blastomyces* vaccine or *blastomycin* and *histoplasmin*. Furthermore, there is a geographical relationship between the organisms.

Adequate treatment for histoplasmosis has not been developed. Perhaps one of the reasons for this is that the diagnosis is rarely made before death. Trivalent antimony and pentavalent antimony should be given a trial. The organism *in vitro* has also been shown to be sensitive to sulfathiazole in a concentration of 50 mg. per cent. This laboratory observation should merit the trial of sulfathiazole in the treatment of histoplasmosis.

#### *Cryptococcosis*

*Cryptococcosis* (Fig. 5) caused by *Cryptococcus neoformans* (*Torula histolytica*) has a marked preference for the lungs, the brain and the meninges. In the American literature most of the instances of this disease will be found indexed under torulosis. The disease has been re-

ported from almost every country in the world. Although it may occur in all age groups males are involved twice as frequently as females. The organism gains entrance into the body through the nose, the mouth and lacerated skin.

The symptoms of primary pulmonary infection are neither specific nor diagnostic. The clinical picture is that of a subacute respiratory infection with a low grade fever and a mild cough. A small amount of mucoid sputum is produced which is rarely blood stained. The lesions in the lungs are often dense, resembling a massive tuberculous lesion or a neoplasm. They may develop in any part of the lung and they are frequently bilateral but may be unilateral or confined to one lobe. The physical findings suggest a lobar consolidation. It must be remembered that there is nothing characteristic about the pulmonary symptoms or signs or roentgenograms of patients with cryptococcosis.

The patient is usually and apparently recovering from the pulmonary infection when there is a spread to the brain or meninges precipitating the cerebral type of the disease. The symptoms of cerebral involvement are not characteristic. They may be those of a meningitis or meningo-encephalitis or they may take the form of a localized tumor. Examination of the cerebrospinal fluid usually reveals the pressure to be increased and the cell count to be elevated. Lymphocytes ordinarily predominate. Chemical studies on the cerebrospinal fluid reveal the glucose and the chlorides diminished and the protein elevated. Diagnosis is established by demonstrating the capsulated budding yeast cells in the centrifuged spinal fluid sediment. On Sabouraud's agar the organism grows slowly. At first the growth is moist, smooth and cream colored. As the culture ages the color changes to yellow and then to brown. A portion of the culture examined microscopically and in an India ink preparation reveals best the wide typical capsules. This capsule takes on a reddish color when the cells are stained by Gram's technique.

No effective method of treating this fungous infection has been reported. The disease is slowly progressive and usually fatal. The organism produces acid and it is for this reason that alkalization therapy has been suggested. Oxyphenylarsine hydrochloride (mapharsen), potassium iodide, sulfathiazole, sulfadiazine and streptomycin have all been tried but their specific effectiveness still remains in doubt.



### *Candidiasis*

Of the many species included in the genus *Candida* only one, *Candida albicans*, is commonly pathogenic for man. The clinical manifestations of infections produced by this organism vary greatly and are dependent upon the region of the body affected. *Candidiasis* (Fig. 6), therefore, is a term which may designate an acute or chronic infection produced by the *Candida* organism occurring in the mouth, vagina, skin, nails, bronchi, lungs and infrequently in the endocardium and the meninges. It is important to call to the attention of physicians that mycologists have replaced the familiar name *Monilia* by the name *Candida*. The name of the fungus, *Monilia albicans*, therefore, becomes *Candida albicans* and the term *moniliasis* should be replaced by *candidiasis*.

The clinical manifestations of infections due to *Candida albicans* may be grouped as superficial and systemic. By superficial infections we are concerned with involvement of the nails and tissues about the nails; the skin, particularly of the axillae, the inframammary folds, the groin, the umbilicus, the interstitial webs of the feet and hands and the intergluteal folds; the mucus membranes, especially the mouth, and the vagina. There apparently is one predisposing factor that is common and necessary for the establishment of a superficial infection from this organism and that is moisture. In this regard a large portion of the patients with cutaneous *candidiasis* are obese. Diffuse sweating is often followed by infections with *Candida albicans*. Housewives, bartenders, waiters and bakers appear to be more prone to the infection because of their occupations. *Candida* infections occur rather commonly in patients with diabetes, probably because of the altered carbohydrate metabolism which favors the growth of the organism.

Clinical manifestations of anaphylactic hypersensitivity may develop during the course of infection. Eczematoid dermatitis of the face and certain cases of miliaria are thought to be clinical signs of hypersensitivity to *Candida* infections. In the instance of miliaria and facial dermatitis the focus of infection has been considered to be intestinal. Vesicular lesions on the hands have characteristics similar to a trichophytid and are considered to be manifestations of hypersensitivity.

Bronchopulmonary *candidiasis* is the term used to designate that type of *Candida* infection

in the lungs where the disease is confined to the bronchial tree. The term pulmonary *candidiasis* is reserved for infections involving the parenchyma of the lungs. Bronchopulmonary *candidiasis*, manifested by the signs and symptoms of an ordinary bronchitis, is not at all an uncommon infection. The temperature may be normal or only slightly elevated and the health of the patient is not seriously affected. The infection may disappear spontaneously or become chronic and mimic the symptoms of a chronic bronchitis of bacterial origin. Pulmonary *candidiasis* is not as common as the bronchial form but is a more severe disease. The areas of infection resemble those of a bronchopneumonia and are scattered throughout two or more lobes. Occasionally there may be lobar involvement. Rarely the meninges and the endocardium of the heart valves may become involved. Agglutinins and precipitins are not present in the sera of patients with superficial infections, but are present occasionally in patients with severe forms of the systemic infections. Skin tests are of no value in the diagnosis of *candidiasis*.

To establish the diagnosis of *candidiasis* one should find the budding organism by direct examination of sputum or exudates and isolate it in pure culture form on Sabouraud's media. Occasionally mycelia will be found in sputum or various exudates. On Sabouraud's media the organism grows as a yeast but when a stab culture is made in gelatin or corn meal agar the mycelial form of the organism is reproduced. To be absolutely certain that the organism obtained is the pathogenic species of *Candida* the organism should be tested for its fermentation reactions. It will form acid and gas in glucose, acid and gas in maltose, but only acid in sucrose media.

Sodium salts of various short chain fatty acids have been found to be fungistatic and fungicidal in different degrees for various pathogenic fungi when tested by in vitro methods. One of these fatty acid salts, sodium caprylate, is particularly effective against *Candida albicans*. Caprylic acid salts prepared in solutions, salves and suppositories are effective in the treatment respectively of thrush, cutaneous infections and vaginal infections produced by this organism. Salts of propionic acid have also been employed. The combinations of the two fatty acids are available commercially for the use in the treatment of this disease.

Sodium caprylate by aerosol has recently been described as a fairly effective measure in the treatment of bronchopulmonary candidiasis. Gentian violet administered intravenously has been recommended by some investigators for the treatment of pulmonary candidiasis. The dose is 5 milligrams per kilogram of body weight and may be repeated daily or every other day for 3 to 7 doses. Potassium iodide orally in doses to a point of intolerance is advised as an adjunct to treatment with either sodium caprylate or gentian violet. It is usually advisable before administering potassium iodide to give the patient 3 to 4 weeks of specific desensitization treatment with *Candida albicans* vaccine. The dilution and dosage employed are calculated in the manner described in the section on blastomycosis. The prolonged use of a *Candida albicans* vaccine in the management of patients with chronic infections is worthy of a clinical trial.

#### *Sporotrichosis*

Sporotrichosis was first discovered in Baltimore by Dr. B. R. Schenck in 1896. The causative fungus was named *Sporotrichum Schencki* 4 years thereafter. It is believed that the fungus grows on vegetation and that humans are infected from this source. Many cases have followed wounds of the upper extremities by thorns, straw and grains. Accidental laboratory infections have occurred and there is on record a case in which there was direct transmission from human to human.

The clinical picture of a typical case is so striking that once seen the disease will always be readily recognized. Extending from the primary lesion, which is usually an ulcer or abscess about the wrist, there will be seen upon the surface of the extremity a line of hard or soft elevated nodules that are neither hot nor tender. Between these nodules there are usually reddened lines that demarcate the course of the lymphatic vessels. If sufficient time has elapsed between the onset of the disease and the time when the patient first presents himself for treatment some of the softer nodules will have developed a draining sinus from which pus can be expressed. It is not usual for the disease to spread beyond the regional lymph glands, but there is a rare case reported in the literature from which metastatic lesions have occurred in the lungs, the liver and the testicles. Quite often the patient with sporotrichosis suffers from some

debilitating disease which lowers his resistance to infection sufficiently to allow the fungus to gain a foot-hold.

The diagnosis is established by culturing the organism from a subcutaneous abscess. A high percentage of positive cultures will be obtained if the material to be cultured is aspirated from an abscess that has not as yet opened. It is difficult to identify the organism microscopically from smears of pus. The character of the growth of *Sporotrichum Schencki* on Sabouraud's agar is distinctive. At first the colony is whitish, shiny and moist, resembling a bacterial growth, but as the age of the culture increases the whitish culture changes to a light tan, then to a coffee brown and finally becomes black. The surface of the colony usually remains shiny but becomes wrinkled with age.

There is less need of a diagnostic skin test for sporotrichosis than for other systemic fungous infections. This is because the clinical picture of the infection is so typical. A 1-100 dilution of a broth filtrate recovered after 2 weeks of growth possesses sufficient specific antigenic substance to elicit a positive tuberculin-like skin reaction in a patient infected with *Sporotrichum Schencki*. Polysaccharides derived from either the fungous mat or the broth filtrate are also effective for skin testing.

The disease responds dramatically to the administration of potassium iodide. Large doses should be given and it is preferable to administer the drug to the point of intolerance and maintain this dose until the patient has fully recovered.

#### *Aspergillosis, Penicilliosis and Mucormycosis*

In another section of this paper the species of *Aspergillus*, *Penicillium* and *Mucor* have been discussed and their importance in the production of disease has been related. Rarely they act as parasites and on such occasions act as the primary cause of disease in the external ear, nasal sinuses, bronchi and lungs, and even at times in the bones and meninges. Many cases of aspergillosis of the lungs have been reported from France, occurring particularly in individuals exposed to massive doses of fungus spores, such as squab feeders who take grain into their mouths to moisten it, fur cleaners who use rye flour, and agricultural workers exposed to the dust from thrashers. A few cases of pulmonary infection from *penicillium* and *mucor* species



have been reported. It must be remembered that various species of these organisms are frequently found in the sputa of patients with chronic bronchitis and infective bronchial asthma. In most instances they are accidental contaminants or at most only secondary invaders.

The primary infections from aspergillus, penicillium and mucor are rare and difficult to diagnose before autopsy. The symptoms are similar to those of other mycotic infections in the lung and to pulmonary tuberculosis. The diagnosis of bronchial or pulmonary aspergillosis, penicilliosis and mucormycosis cannot be made without

repeated demonstrations of branching hyphae in the sputum. Cultivation of the fungus is not enough. Prognosis is good in the mild cases, but is poor when there is massive involvement of the lung with or without abscess formation. Potassium iodide should be administered by either the slow or the rapid technique, depending upon the degree of hypersensitivity of the patient to his own organism. If there is evidence of hypersensitivity the patient should be desensitized before the administration of iodides according to the technique outlined in the section on blastomycosis.

## THE CLINICAL APPLICATION OF CORTISONE AND ACTH IN ARTHRITIS AND RELATED CONDITIONS: METHODS AND PROBLEMS

### Part I: METHODS AND CLINICAL OBSERVATIONS

By

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### INTRODUCTION

This report presents our observations during a period of a little over one year in the use of cortisone and ACTH\* in a group of 140 cases of arthritis and related musculoskeletal disorders. These consisted of 72 cases of rheumatoid arthritis, 27 of rheumatoid-like diseases and 41 patients with non-rheumatoid musculoskeletal conditions. During our comparatively short period of investigation we have endeavored to find the answer to certain questions regarding these new compounds. They are:

1. May they be employed as practical therapeutic agents?
2. What are the nature and frequency of undesirable side-effects and complications in the use of cortisone and ACTH, and how may they be avoided?

3. What are the hazards of prolonged administration of these substances?

We recognize that a study of such duration is insufficient for an adequate answer to all of these questions. We hope, nevertheless, that our experience to date may be of some value as an interim report in the rapidly growing literature on this subject, since the original historic announcements of Hench, Kendall, Slocumb and Polley. (1)

The removal of restrictions on the use of cortisone and ACTH and their availability demand a realistic approach to the problems created by their widespread administration. We are attempting, therefore, to summarize our observations on the effects of these compounds together with the procedures we have utilized to permit us to apply them as judiciously as possible in the present state of our knowledge. Included in our presentation are tables of those routines and methods which, it is hoped, afford greater

\*ACTH supplied in part by Dr. John R. Mote, Medical Director, Armour Laboratories.

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safety in the clinical administration of cortisone and ACTH. The basis for most of these procedures adopted by us and others undoubtedly will become clearer in the course of our discussion.(2-6)

#### METHODS OF ADMINISTRATION AND DOSAGE

All patients in our series were hospitalized for an initial period of study and administration of ACTH or cortisone. Preliminary to their use, base-line observations were carried out. After the compounds were started, the patients continued their usual rest, activity and analgesics until they themselves requested a change.

The routine followed in the administration of ACTH and cortisone is divided into two periods:  
I. *Period of Initial Observation (2-3 weeks)*

##### 1. a.) Daily or alternate days

Physical examination, especially for  
Weight  
Blood pressure  
Skin and Mucosae  
Emotional reactions and moods  
Edema  
Effects on coincidental disease

##### b.) Regulation of dosage

#### 2. LABORATORY AIDS

##### INITIAL BASE-LINE TESTS (*Essentials underlined*)

*Routine Urinalysis*

*Complete Blood Count*

*Sedimentation Rate*

*Blood:*

Glucose, Urea Nitrogen, Uric Acid  
Carbon Dioxide Combining Power,  
(Potassium, Sodium, Chloride,  
Cholesterol and Fractions, Calcium,  
Phosphorus and Alkaline Phosphatase)

*Electrocardiograms*

*Chest Plate*

X-ray films of joints chiefly affected  
(Lumbosacral Spine, lateral, in patients  
over 50 years)

#### 3. DIET AND SUPPLEMENTARY MEDICATION (*during therapy*)

Low sodium (and low carbohydrate in obese)

Potassium chloride (enteric tablets, Gm. 0.5, 2 p.c.)

Other medications—sedation for insomnia; analgesic complements during maintenance.

Instruction as to rest, exercise and physiotherapy.

#### II. PERIOD OF MAINTENANCE

1. Weekly Check-up, then q. 2-3 weeks, with complete observations.

2. Adjustment of dosage to attain rest periods, a few days or weeks (?)

3. Doses q. 2-3 days or daily (oral), lowest optimum amount; (ACTH actually required in 1-2 daily injections)

4. Laboratory studies during treatment

Fractional urines first 3 weeks by patient with clintest tablets; then daily.

Sedimentation rate, Complete Blood Count, Complete Urinalysis at check-ups.

Repeat of any tests as indicated by clinical signs for comparison with initial base-line findings.

Blood sugar frequently in diabetic patients.

5. The special diet and supplementary medication continued.

The usual dosage pattern is shown in Table 1. Cortisone and ACTH were used according to the greater availability and other practical considerations at the time. The use of oral cortisone simplifies the problem of administration.

A preliminary period of control therapy usually was carried out in our cases. This consisted of employing either placebo injections or tablets, depending upon the route of administration to follow. With improvement, reduction of doses and substitution of placebos afforded further control of our observations. In long-term administration constant attempts were made to adjust dosage to maintain patients on the minimal amount of the compound necessary for satisfactory effects.(1-10)

#### CLINICAL OBSERVATIONS IN VARIOUS LOCOMOTOR DISORDERS—RHEUMATOID ARTHRITIS

Our results may be divided into two groups or periods,—early, 10-30 days; and longer-term, 30-340 days. Response was evaluated according to the therapeutic criteria of the American Rheumatism Association.(11) These results are shown in Table 2. Such evaluation is purely objective. Generally, subjective improvement was proportionate and sometimes of considerably greater degree than the objective findings, at least during the initial or early periods of administration.

In our 72 cases of rheumatoid arthritis, during the initial therapy 44% gave Grade I to II im-

provement, with 4% in complete remission. 54% showed slight improvement, and 2% no benefit.

In the follow-up intervals 55 patients had been maintained on ACTH and cortisone for one month to one year, when these figures were compiled. During this maintenance time 27% continued to be greatly improved, 17% showed no further benefit or became worse. The three patients in remission retained this response for four to seven weeks. The proportion of cases that showed slight improvement during initial hospitalization remained almost identical during the later maintenance period.

The clinical course of our patients amply confirmed the observations described by Hench and his coworkers and others.(1-10) Stiffness, pain and tenderness diminish in that order. Swelling recedes next, but usually not completely. Correlated with these effects, increased ranges of motion become evident, but coordinated movements are usually performed with greater ease even when joint mobility has not been improved to any large degree. The sense of well-being and pain-relief often are remarkable. The improvement in the performance of simple acts like standing up, getting up or down stairs, which accompanies other responses frequently may be greater than the objective evidence of benefit.

Hench has aptly termed these effects, "arthritis in miniature".(1) Even with pronounced improvement, one or more joints are likely to remain boggy, slightly swollen and somewhat tender. Frequently great symptomatic relief is observed in patients who continue to show slight or considerable articular swelling, and improvement in mobility may be noted in joints still swollen and boggy.

No other therapeutic measure has given as consistent, rapid and frequent improvement of some degree in rheumatoid arthritis as cortisone and ACTH. Unfortunately, however, symptoms return sooner or later upon withdrawal or even reduction of the adequate doses. Often the recurrent symptoms are more severe than they were originally. Even in cases on maintenance therapy, frequent booster doses may be needed to overcome "rebound" symptoms.

Our observations indicate that patients classified in Stages III and IV, i.e., the more advanced cases, are apt to show the poorest results (Tables 3 & 4), rarely a Grade I response.(11) Tables 3 & 4 present these figures in more readily visualized form. In view of the small number of cases in each column, percentages are not meant to be accurate statistical deductions. Our series contained a large number of such severe cases and our results

TABLE 1

*Method of Administration of Cortisone and ACTH*

1. PRELIMINARY HOSPITALIZATION

(In all cases here)

2. DOSAGE

A. PARENTERAL

1. Cortisone:—200-300 mg. I.M. for the first 24 hours (100 mg. every 8 hours); 150-200 mg. next 24 hours, then 100 mg. daily thereafter (5 mg. every 12 hours); in some cases 200 mg. daily until symptoms were adequately resolved; then the maintenance reduced gradually until sufficient for control of symptoms.
2. Adrenocorticotrophic Hormone:—100-150 mg. I.M. for the first 24 hours (25-37.5 mg. every 6 hours); 75-100 mg. next 24 hours, then 40-50 mg. daily (10-12.5 mg. every 6 hours); in some cases 80-100 mg. daily until symptoms adequately resolved; then a gradual reduction of maintenance dose level sufficient for control of symptoms.

B. ORAL

1. Cortisone:—Same doses as parenteral, increased by 25% if necessary; evenly divided 4 to 2 times a day, then 1 tablet daily or alternate days in some cases.

3. AMBULATORY FOLLOW-UP PLAN

Both continuous and interrupted methods of administration investigated.

are in conformity with the observations of Boland.(5)

Occasionally a change from one compound to another overcame symptomatic resistance or eliminated side-effects in the follow-up group. Three cases were refractory to both substances after a period of time.

#### RHEUMATOID-LIKE MUSCULOSKELETAL DISORDERS(1-4)

Cortisone and ACTH were administered to seven patients with severe ankylosing spondylitis (Table 5). All derived partial to complete pain relief. Stiffness was diminished in variable degrees. In all but one case chest expansion was increased. Functional capacity and range of motion were greatly improved in three cases and slightly improved in the remaining four. Three of these patients presented peripheral joint involvement, which improved markedly with the hormone therapy. In 5 cases discontinuance of the compounds was followed by a relapse within a short time.

In 4 patients with psoriasis and arthropathy the joint manifestations and skin lesions were greatly improved initially (Table 5). In each the cutaneous eruption tended to relapse on maintenance dosage and in one case it became worse. The joint involvement in two of the patients has returned to their former state while still on therapy. The other two cases have remained under satisfactory control. In this small group the articular features seemed to respond

to smaller doses of ACTH and cortisone than did the skin lesions.

In one case of non-specific ulcerative colitis with arthropathy (Table 5), the colonic and joint symptoms responded well to ACTH. Withdrawal of medication was followed by quick relapse.

The pattern of response of the joint symptoms and signs of these twelve cases of rheumatoid-like diseases was approximately similar to that of rheumatoid arthritis. The tendency toward recurrence of the active clinical picture on discontinuance of therapy was comparable to that seen in rheumatoid arthritis.

#### COLLAGEN DISEASES

Nine patients with "collagen diseases" were studied (Table 5). These consisted of one case of scleroderma, 3 of dermatomyositis and 2 of lupus erythematosus. In this group also are three patients with rheumatic fever now commonly included among the collagen complexes. These cases were treated with cortisone and ACTH during an initial hospital stay and some were followed for periods up to one year.

In the case of scleroderma moderate improvement in skin manifestations and articular range of motion was noted. In the three patients with dermatomyositis, improvement in their articular and other features was marked. These benefits persisted for many months after discontinuing therapy. Two cases of disseminated lupus erythematosus received the com-

TABLE 2  
*Results of Administering ACTH and Cortisone In Rheumatoid Arthritis\**

	Number of Cases	Complete Remission (Grade 1)	Greatly Improved (Grade 2)	Slight Improvement (Grade 3)	None or Worse (Grade 4)
Initial					
Short-term					
Hospitalization	72	3	29	39	1
10-30 days	—	—	—	—	—
		4%	40%	54%	2%
Ambulatory					
Maintenance,					
30-340 days	55	3	15	28	9
later	—	—	—	—	—
		5%	27%	51%	17%

\*Evaluation of Response According to Therapeutic Criteria of the American Rheumatism Association.



pounds during an acute phase. One showed slight improvement and the other went into a complete remission lasting six months. A sudden relapse occurred while out of the hospital and, before therapy could be reinstated, the patient expired.

In all of the three cases of acute rheumatic fever with carditis there was marked subsidence of rheumatic activity during the administration of cortisone and ACTH.

#### GOUT

Two patients suffering attacks of acute gouty arthritis were promptly relieved by ACTH and cortisone (Table 5). One of these had been refractory to full doses of colchicine. Of four cases of chronic gouty arthritis, 2 showed only slight benefit from these compounds and one became worse. The fourth case of chronic gout derived great benefit.

In the occasional patient with an acute attack of gout unresponsive to colchicine, ACTH or cortisone may be useful. What their effects may be in chronic tophaceous gout will only be determined by long-term observations in many patients.

#### NON-RHEUMATOID MUSCULOSKELETAL DEGENERATIVE ARTHRITIS OF THE HIP

Twelve cases of severe osteoarthritis of the hip were treated (Table 6). Nearly every patient had been studied by the orthopedic departments and had been referred to us as a serious

and difficult problem. All cases presented advanced changes with practically absent joint spaces in their X-ray films. Each one complained of marked limitation of motion, pain and stiffness.

Following ACTH or cortisone there was great relief of pain, definite diminution of stiffness and improved coordination of motion in nine of the twelve cases. Increased ability to perform simple acts such as arising from a chair or climbing stairs was evident in these nine patients. Only two of them, however, showed a significantly increased range of motion at the hip.

#### REFLEX DYSTROPHY (The Shoulder-Hand Syndrome)

Eleven cases of reflex dystrophy of the upper extremity (shoulder-hand syndrome) received ACTH or cortisone or both (Table 6). All of the patients had undergone various treatments, such as manipulation, physical therapy, stellate ganglion blocks and analgesics without satisfactory benefit.

All of the symptoms and signs in two patients were completely abolished with ACTH. In the rest of the group ACTH and cortisone afforded great improvement in five, and slight improvement in three. There was one failure.

Pain and vasomotor disturbances were rapidly improved. Limitation of motion at the shoulder responded sooner than at the hand in most cases and in patients with Stage III involvement contractures of the hands remained uninfluenced. (14)

TABLE 3

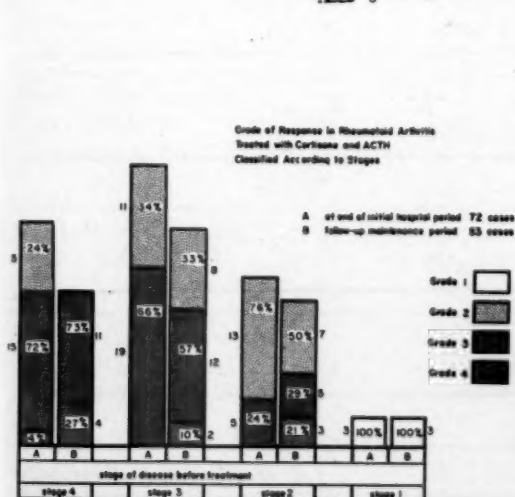
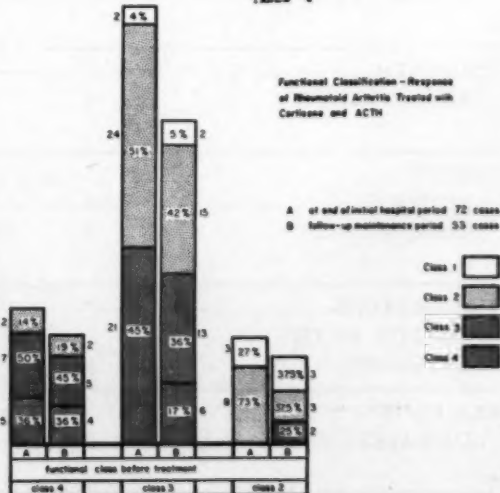


TABLE 4





In the average case of reflex dystrophy larger early doses of cortisone and ACTH were needed than in the other conditions reported here. These patients required maintenance therapy for 1-5 months before it could be discontinued entirely. Seven cases have been followed for periods up to eight months since cessation of therapy without a relapse.

#### PERIARTHRITIS OF THE SHOULDER ("Frozen Shoulder")

Fourteen patients with periartthritis of the shoulder (periarticular fibrositis) were given cortisone and ACTH with or without manipulation under anesthesia (Table 6). Eleven were started on these drugs. Three first received them after manipulation. Six of the eleven cases started on the compounds recovered completely. Of the five failures, three were subsequently manipulated, with complete recovery in one.

Of the three other patients who received cortisone after manipulation, two recovered completely; the other was unresponsive.

Nine of the fourteen cases, therefore, showed a complete response after the use of ACTH or

cortisone in one way or another, and it has persisted after discontinuation of therapy. All of the patients receiving these compounds experienced effective pain-relief. However, in evaluating our results, only greatly increased active range of motion was considered a good effect.

All of these patients were severe, refractory cases with great pain and limitation of motion who had failed to respond to the conventional forms of treatment.

#### CALCIFIC TENDINITIS AND BURSITIS OF THE SHOULDER (Table 6)

One case with typical acute calcific tendinitis of the supraspinatus tendon was given cortisone. Pain was relieved in the first day and shoulder disability was greatly improved within 72 hours.

In a case of chronic calcific tendinitis with periartthritis, great decrease of pain and tenderness was noted within one week. Two months of maintenance therapy sustained the effects. No change in the calcific deposit was noted in either patient.

These 2 cases are suggestive, but do not represent a significant experience.

TABLE 5  
*Results In Rheumatoid-Like Diseases*

	No. Cases	ACTC	Cort.	Over-All Results*			
				Great	Slight	None	Worse
ANKYLOSING SPONDYLITIS	7	1	6	3	3		
		(1 both)					
PSORIATIC ARTHROPATHY	4	2	2	4			
		(1 both)					
GOUTY							
ACUTE	2	1	1	2			
CHRONIC	4	2	2	1	2		
		(1 both)					
ULCERATIVE COLITIS WITH ARTHRITIS	1	1		1			
COLLAGEN DISEASES	9	5	4	7	2		
(all short-term observations)							

\*No complete remissions, except in Ac. Gout.

**TRIGGER FINGER (Table 6)**

In two cases of rheumatoid arthritis with coincidental constrictive tendovaginitis ("trigger finger") of long-standing duration, no benefit was noticed from cortisone or ACTH on the "trigger-finger". It is possible that in earlier involvement of this nature more satisfactory effects may be obtained.

**ORTHOPEDIC PROCEDURES WITH ACTH AND CORTISONE(12)****SURGICAL**

We have observed six cases who have undergone surgical procedures while they were on cortisone or ACTH therapy. The work of Ragan(7) and coworkers on delayed wound healing with these substances poses the problem as to whether interruption of therapy is necessary in patients undergoing surgery.

In our series of two arthrotomies, two biopsies and one incision and drainage of an abscess, healing occurred normally without interruption of steroid administration. In a case of bilateral bunion operation with the additional removal of

a subcutaneous nodule at each hand, therapy was discontinued five days post-operatively owing to oozing of two of the wounds.

**CONTRACTURES AND POST-MANIPULATION****USE OF ACTH AND CORTISONE**

The influence of cortisone and ACTH on the correction of contractures is under study at present, but sufficient time has not elapsed for an evaluation of results. The relief of pain, inflammation and muscle spasm enables active and passive physiotherapy and manipulation to be carried out in patients who previously could not tolerate such procedures. It would appear that ACTH and cortisone may be valuable adjuncts to other therapeutic measures in the management of contractures. Their influence on existing or developing fibroplasia may insure better results with exercises, manipulation and other orthopedic procedures, especially musculoskeletal surgery, as we already have discussed with regard to peri arthritis of the shoulder.

**TABLE 6**  
*Results In Non-Rheumatoid Conditions*

	No. Cases	ACTH	Cort.	Complete	Over-All Results		
					Great	Slight	None
DEGENERATIVE ARTHRITIS (HIP)	12	2	10		1	8	3
SHOULDER-HAND SYNDROME (REFLEX DYSTROPHY)	11	5	6 (1 both)	2	5	2	2
PERIARTHRITIS OF SHOULDER*	14	6	8 (1 both)		8	1	5
CALCIFIC TENDINITIS AND BURSITIS OF SH.	Acute 1 Chron. 1		1	1			
			1		1		
TRIGGER FINGER	2	1	1				2

\*Manipulation under anesthesia in 5 cases.

## PHOENIX CLINICAL CLUB MASSACHUSETTS GENERAL HOSPITAL CASE NO. 28342

The Case History in this discussion is selected from the Case Records of the Massachusetts General Hospital, and reprinted from the New England Journal of Medicine. The discussant under Differential Diagnosis is a member of the staff of the Massachusetts General Hospital. The other discussants are members of the Phoenix Clinical Club.

A seventy-year-old man was admitted to the hospital because of persistent hematuria.

Three months before admission, the patient slipped while walking and twisted his right side. Following this, he had slight pain and an ache in the right flank that disappeared after several days. At that time, he noticed the onset of hematuria, persistent to the day of admission except for a single period of three weeks. The degree of hematuria varied considerably and occurred during all parts of micturition. There was no dribbling, hesitancy or incontinence. A slight burning occasionally accompanied urination, and the patient occasionally suffered with nocturia and frequency.

Two months prior to admission, he was cystoscoped in the Out Patient Department and found to have a papillary growth of the bladder 1.5 cm. above the left orifice.

For three weeks before admission, the patient had an uncomfortable feeling in the left groin, and three days prior to entry he suffered with low midback pain lasting a day.

The past and family histories were irrelevant.

Physical examination revealed a well-preserved elderly man in no distress. Examination of the lungs and heart was negative except for a systolic murmur at the apex and over the aortic area. The abdomen was soft, and no masses were felt.

The blood pressure was 150 systolic, 92 diastolic. The temperature, pulse and respirations were normal.

The urine showed a 4 plus test for albumin, a few white blood cells and many red blood cells. There were no casts, and the concentration was good. A culture of the urine revealed a few colonies of *Staphylococcus albus*. Examination of the blood showed a red-cell count of 4,250,000 with 75 per cent hemoglobin, and a

white-cell count of 6300 with a normal differential. The nonprotein nitrogen was 23 mg. per 100 cc., and the prothrombin was normal. The phenolsulfonephthalein test showed 35 per cent excretion in fifteen minutes, and an additional 15 per cent in half an hour. X-ray films of the skull and chest revealed no lesions resembling metastases.

Cystoscopy failed to reveal the papillary growth of the bladder previously seen in the Out Patient Department. An intravenous pyelogram showed delayed excretion of the dye, which faintly outlined the ureters and kidneys. The bladder outline was relatively smooth; there was a slight defect at the base consistent with an enlarged prostate. A retrograde pyelogram demonstrated bilateral pressure defects along the upper surfaces of both kidneys. However, the lower poles were relatively normal.

Operation was performed on the fourth day after admission.

DR. GEO. A. WILLIAMSON

This case would seem to be a fortunate one to have to discuss because there is only one symptom to be analyzed. Haematuria, which has persisted for three months in a seventy year old male, would limit the pathology to the genitourinary tract and the patient's age limits the variety of pathology to that which would occur in the older age group.

There was an injury at the time of the onset of symptoms, but it does not seem to have been of any great severity. It is described as a slip causing him to twist his lower back and no mention is made of any symptoms of acute pain, muscle spasm or functional limitations in his activities. The slight pain in his right flank disappeared after a few days leaving only the haematuria with occasional nocturia and frequency. We note from the history as contained in the protocol that blood was present in the urine in all phases of micturition indicating that the source of bleeding was probably in the upper urinary tracts.

One month after the onset of haematuria, a papillary growth 1.5 centimeters above the left ureteral orifice was found at the time of an outpatient cystoscopic examination. We are not told whether the growth was removed for examination by the pathologist or was destroyed by fulguration at the time of this bladder inspection. At any rate, apparently his bleeding continued and about one month and a half later he devel-

oped some discomfort in the left groin and mid-lumbar region lasting for only one day. It was apparently not severe enough to make any great impression and, therefore, could not have been a renal colic.

He was admitted to the hospital because of his persistent haematuria along with some mild discomfort in the midlumbar region and left groin.

His physical examination at the time of admission did not show any remarkable weight loss or distress such as might be expected from most malignant processes or serious infectious conditions. As far as the chest, heart, and abdomen were concerned, no evidence of pathological changes or unusual complaints are mentioned. Blood-pressure, temperature and respiration were entirely normal.

The urine showed three plus albumen, a few white blood cells, many red blood cells, no casts and the concentration was good. The P.S.P. test of 50% in the first half hour is a normal result.

The blood chemistry and blood counts were normal indicating the lack of any deficiencies in kidney function.

X-rays of the chest and skull were negative for any evidence of metastatic new growths.

A cystoscopic examination was made after admission and showed what might be considered as a normal bladder for a man of his age and no signs of the papillary growths previously mentioned were noted.

Retrograde pyelogram showed pressure defects along the upper surfaces of both kidneys with the lower poles relatively normal. There was no residual urine in the bladder and no definite source of bleeding from the bladder or either ureter could be discovered. The only definite finding was the pressure defects along the upper surfaces of both kidneys with the most marked pressure along the superior calix on the left side.

A consideration of the causes of haematuria may lead us to the diagnosis:

#### I. Haematuria from urinary tract.

- (1) Renal causes: (a) If the bleeding is scant we can look for calculi, tubercloses, hydronephrosis, polycystic kidney, acute pyelitis, or nephritis, injury or the effects of drugs on the kidney tissue such as sulfanilamides, urotropine, etc.

(b) If the bleeding is profuse, we must consider

1. Malignant tumors of the kidney  
Hypernephroma  
Carcinoma of kidney or pelvis  
Sarcoma
2. Innocent tumors—papilloma or angioma of pelvis
3. Calculus and tuberculosis may also be considered
4. Injuries to the kidney
5. Essential haematuria
- (2) Ureteral causes: calculus or neoplasm of the ureter
- (3) Bladder causes: malignant or benign papilloma or carcinoma of prostate, tuberculosis of bladder or prostate, calculus, acute cystitis, injury or parasites.
- (4) Urethral: acute urethritis or impacted urethral calculus, papilloma, naevus, or caruncle of urethra.

#### II. Haematuria from disease of neighboring organ.

1. Carcinoma of uterus, vagina, rectum.
2. Acute salpingitis or appendicitis.
3. Pelvic abscess.
4. Tuberculosis of intestine or diverticulitis of intestine.

#### III. Haematuria in general diseases.

1. Renal infarction in endocarditis.
2. Arteriosclerosis.
3. Leukaemia.
4. Purpura.
5. Scurvy.
6. Haemophilia
7. Acute fevers such as malaria, etc.

We may usually expect some additional symptoms in haematuria which will assist in locating the cause of the bleeding.

The information given to us indicating that the bleeding was apparent in all stages of micturition would indicate that the course of bleeding was probably located in the kidney region rather than from the lower urinary tract.

On cystoscopic examination, no lesion was found in the bladder from which the haematuria could have emanated. Although we are not told that blood was seen to come from either ureter at the time of examination, we must assume that it was of renal or ureteral origin. The functional tests were normal and the N.P.N. showed no elevation. The patient's age and



lack of sufficient urinary symptoms leads me to discard tuberculosis of the kidney, renal calculi, acute nephritis or pyelitis as a cause of the bleeding. The injury he is reported to have had was not severe enough to produce direct damage to the kidney parenchyma sufficient to produce all this haematuria. Polycystic kidney and damage to the kidney parenchyma by medications such as urotropin, or sulfanilamids, etc. are also discarded because of lack of symptomatology or history.

Pathology of or in the ureters, bladder or urethra may be passed over because of the type of the bleeding, the lack of acute inflammatory or colicky symptoms, and the negative results in these areas of the cystoscopic examination.

As genito-urinary causes of the haematuria, we are left with the possibility of neoplasms of the kidney.

There are extra-renal factors involving neighboring organs as we have seen from the table of causes of haematuria. None of these need be considered at this time because of the lack of symptoms relating to the intestinal tract where related pathology might be found.

The possibility of some general disease must be reviewed. The blood diseases and acute fevers may be ignored in the face of our normal laboratory findings and the absence of additional symptoms of any other diseases.

Returning to the kidney and to tumors of the kidney, we have the problem of haematuria of at least three months duration, which, however, has had little, if any, effect on the general health of the patient or upon his renal functions. The lesion is so placed that it involves the region of the upper poles of both kidneys and is, therefore, a bilateral renal tumor, bilateral suprarenal tumor, retroperitoneal tumor producing extra renal pressure, or haemorrhage from trauma to the kidney producing a partial rupture of the parenchyma.

Tumors of the kidneys may be classified as:

- (1) Cysts.
- (2) Benign tumors such as fibroma, lipomas, angiomas and adenomas.
- (3) Malignant tumors which occur in
  - (a) Childhood (birth to 5 years).  
Embryonal or (Wilms tumor).
  - (b) After 40 years: Hypernephroma  
Adenocarcinoma  
Sarcoma

- (4) Malignant tumors in the pelvis and ureter.  
Papilloma of renal pelvis—benign with malignant possibilities.  
Papillary carcinoma  
Squamous cell carcinoma

The benign tumors are uncommon and usually do not produce symptoms until they attain considerable size but most of them are found, incidentally, at postmortem. The Wilms tumor, which is a mixed embryonal tumor, is found almost entirely in children although a rare case has been reported in the adult.

Of the malignant tumors, the hypernephroma is the most common. Its onset is insidious with haematuria as the earliest and in many cases, the only symptom for some time. Metastases are common and the symptoms produced by the secondary foci are frequently what brings the patient to the doctor for care. The outlook is poor and the only treatment is nephrectomy in the early cases.

The report of finding a papilloma in the bladder at the time of the original cystoscopic suggests the possibility of an implantation in the bladder of a pelvic or ureteral tumor. I assume that the urologist destroyed it at the time as it was not seen on subsequent examination.

I cannot substantiate a diagnosis of trauma to the kidney or pressure on the kidney by retroperitoneal growths.

My diagnosis: Primary tumor of the kidney, malignant, probably hypernephroma.

#### DIFFERENTIAL DIAGNOSIS

Dr. George G. Smith: The question in this case is whether a twist of the torso sustained while the patient was walking, without any actual fall, could cause bleeding from trauma of a normal kidney. I do not believe it would. I think it might if the patient had renal stone or hydronephrosis or some pathologic condition in the kidney, which might be ripped or torn by any unusual motion.

The fact that the bleeding occurred during all parts of micturition is rather against a prostatic origin. Usually, blood from the prostate precedes urination—not always, but usually, furthermore, there was no dribbling, hesitancy or incontinence, and nothing to substantiate a diagnosis of prostatic bleeding.

The answers to two questions would be helpful. Did the patient have any bladder residuum? Was the blood seen coming from the ureter or any particular source at the time of cystoscopy?



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Dr. Tracy B. Mallory: Can you answer either of those two questions, Dr. Gens?

Dr. John P. Gens: There was no bladder residuum, and no blood could be seen coming from either ureter at the time of cystoscopy.

Dr. Smith: Was the patient bleeding at the time?

Dr. Gens: No.

Dr. Smith: It is a good thing to cystoscope patients with hematuria at the time there is blood in the urine, because then one can get an indication of the origin of the blood, which one often cannot get later on.

The fact that cystoscopy failed to reveal the papillary growth probably means that the alleged papilloma was a blood clot adherent to the bladder wall. It is very difficult to distinguish between an adherent blood clot and a papilloma that has been bleeding and is infiltrated with blood. With kidneys that show as good a renal function by nonprotein nitrogen and phenol-sulfonephthalein tests as this man's kidneys did, one expects to see a very good picture of the kidney pelvis from the Diodrast or Neoskiodan, whichever one was used, unless he was not well prepared and had a great deal of fluid.

From the story to date I have not the slightest idea what this man was operated on for. May we see the x-ray films?

Dr. Laurence L. Robbins: These are the films of the intravenous pyelograms, and as noted, there is no good visualization of the calyces, pelves or ureters. The retrograde pyelogram, in contrast, shows these very obvious bilateral pressure defects in the outlines of both pelves. They are nearly symmetrical, but there is more involvement of the superior calyx on the left.

Dr. Smith: They are excellent and unusual films, I should say. The simultaneous bilateral occurrence of tumor is possible, but very unusual. It is much more likely that the patient had bilateral solitary cysts. The pelves and calyces do not give the picture of congenital polycystic kidneys. Furthermore, the renal-function tests are too good for a case of polycystic kidneys in a man of this age. On the other hand, there is very definite pressure here, as Dr. Robbins has pointed out. The uppermost calyx is thinned out over a presumably smooth,

symmetrical round tumor. It is quite possible to get marked hematuria from solitary cyst of the kidney, perhaps owing to interference with the blood supply, sometimes with rupture of the cyst. I should make a diagnosis of bilateral solitary cysts of the kidneys. I do not know which side I should operate on or why, but that is my diagnosis.

Dr. Mallory: Would you have operated on this patient on this evidence?

Dr. Smith: I suppose he could have had a tumor on one side and a cyst on the other, but it would be unusual to have the findings so symmetrical. If he had had successive episodes of bleeding and if observation had shown that he always bled from one side, I should be inclined to operate on the side. If it were a tumor, I should take out that kidney, and if it were, as seems more probable, a solitary cyst, I believe that removal of such a cyst would check the hemorrhage and that it would do to the patient's advantage to operate.

Dr. William B. Breed: Without that evidence, where would you operate?

Dr. Smith: As I say, I should want to know from which side the bleeding was coming. We do not know that from the history.

Dr. Breed: Well, where are you going to operate—midline, right or left?

Dr. Smith: I should guess that the left kidney would be the one to pick because the upper calyx appears to be more involved in the x-ray film than the one on the other side, but I do not believe that is sufficient reason for selecting that side. I should insist on knowing which side was bleeding and if this elderly man stopped bleeding and had no symptoms, I should leave him alone.

Dr. J. Dellinger Barney: What about bilateral adrenal tumors?

Dr. Smith: These lesions very evidently involved the structure of the kidney itself—the parenchyma of the kidney. So far as I know, adrenal tumors do not do that; they push the kidneys down but do not invade them.

Dr. Fletcher H. Colby: It would add to the interest of the discussion if Dr. Smith were told the next step.

Dr. Mallory: We are prepared to do that. Dr. Gens, will you proceed?

Dr. Gens: We never did know from which

side the bleeding was coming. When the patient was admitted to the hospital, the gross hematuria stopped. The urine on both sides showed red blood cells. We decided to operate on the right side because we believed that the chance of cyst was greater on the left side since the calyces were actually involved on the left side, whereas the tumor was pushing the pelvis or the calyx away on the right side, which would be more like neoplasm. Therefore, we operated on the right side, came down on a cyst and treated it in the usual fashion.

Dr. Mallory: Would you then wish to do anything more Dr. Smith?

Dr. Smith: I should assume that there was a cyst on the other side also, and unless he bled again or had further symptoms, I do not believe I should operate.

#### CLINICAL DIAGNOSIS

Cortical cysts of kidneys.

#### DR. SMITH'S DIAGNOSIS

Bilateral solitary cysts of kidneys.

#### ANATOMICAL DIAGNOSIS

Solitary cyst of right kidney.

Papillary adenocarcinoma of left kidney.

#### PATHOLOGICAL DISCUSSION

Dr. Mallory: Suppose you go ahead with the story, Dr. Gens.

Dr. Gens: About seven days later, although the patient had a perfectly uneventful immediate postoperative course, he once more had gross blood in the urine.

Dr. Smith: May I ask what you did to the right kidney?

Dr. Gens: We excised the wall of the cyst. Then we decided to aspirate the left side but did not obtain anything but a few drops of blood, although we were fairly certain that we had touched the tumor mass in the left kidney.

Dr. Smith: But you knew the blood was coming from the left side?

Dr. Gens: No.

Dr. Smith: I believe I should have looked in the bladder to see if the blood were coming from the left side.

Dr. Mallory: I think by exclusion it was believed that the hemorrhage must have been coming from the other side.

Dr. Smith: I think that is assuming too much; however, it probably was so. But I do not believe one can take anything that is easily demonstrated for granted. One could easily put in a small cystoscope and look at the ureters.

Dr. Mallory: Eventually, the patient was explored on the left side, an obvious tumor was found, and a nephrectomy performed. He made an uneventful convalescence. The tumor proved to be a papillary adenocarcinoma of renal origin.

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Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. (See MEDICAL WRITING by Morris Fishbein.)
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Submit manuscript typewritten and double-spaced.
6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.

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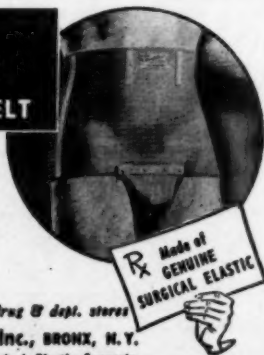
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## Editorial

### POST MORTEM

The status of the practice of medicine in a hospital, a community, or even during an era of time coincides fairly closely with the percentage of autopsies which are performed in those situations. It may be that the status considerably depends upon the percentage.

Autopsies are usually not requested by the relatives. They are too often not urged by physicians. They are quite often not considered necessary by the coroner or medical examiner.

Autopsies are obtained most often by a man with a fine medical curiosity, and the drive necessary to overcome the inertia or obstruction which kinfolk feel after a death. A hospital with 60 to 70 per cent autopsies is bound to be a good teaching institution with an alert staff. It probably also has at least one 'ramrod' to urge or heckle the less eager members in non-medico-legal cases.

There must be legal authorization for an autopsy. The limits and exact rules are often vague in the minds of physicians, both long-time and recently in practice. The rules are actually quite clear and simple, both as they apply to deaths from natural causes or from violence or casualty.

The best brief summary of the 'Legal Authorization for Autopsy' which has appeared in recent times is that of Louis J. Regan, M.D., L.L.B., of Los Angeles. The report was read at the American Academy of Forensic Sciences in Chicago, March 1st, 1951, and published in the *Annals of Western Medicine and Surgery* for April, 1951. It contains the provisions for autopsy in each of the states, and an epitome of the rules. *The provisions as they affect Arizona are listed as follows,—*

#### ARIZONA

##### I. AUTHORIZATION

###### A. Coroner. 1949 Laws, Ch. 39, Sec. 1

Any person shall report death without medical attention to a peace officer who shall investigate and report to the coroner, who may and, upon request of County Attorney, shall direct the medical examiner or any other qualified physician to make such examination of the body as may seem necessary to determine the cause of death. The medical examiner or physician shall report the findings to the coroner and County Attorney.

The coroner may sign the death certificate, stating the cause of death, or may direct the medical examiner to do so.

Where there is a suspicious death, inquest is to be held with six to twelve jurors. (R.C. 1928, Sec. 5272).

B. The Superintendent of the State Prison may, with the consent of the governor, dispose of bodies or portions thereof, of persons executed at the State Prison and not claimed by relatives or friends within 24 hours, for scientific purposes to any recognized institution for scientific research. (Rev. R.C. 1928, Sec. 5132).

C. Workmen's Compensation Act. No statute.

D. Private Individual. No statute.

E. Insurance. No statute.

*New York Life v. McNeeley* (Ariz.), 72 Pac. (2d) 948. An insurance case. The issue, to decide whether death was by accident or suicide. The wife of the deceased requested an autopsy and it was performed by the coroner under Sec. 68-606, and used as evidence.

##### II. PERFORMANCE

###### A. By any qualified physician.

###### B. By the medical examiner.

The Board of Supervisors may, upon request of the County Attorney, or the coroner, appoint a medical examiner to examine the body of any person believed by the coroner to have died through criminal means. The person appointed must be a qualified and practicing physician and surgeon.

##### III. LIABILITY

###### A. Criminal.

Sec. 43-5201: Provides that every person who mutilates a body without authority of law or removes a body with intent to dissect it without authority, is guilty of a felony. (R.C. 1928, Sec. 4652).

###### B. Civil. No statute.

• • •

The phrase 'by any qualified physician' gives a wide leeway in case of need. It is certain, however, that most of the examinations should be, and are, made by physicians trained in pathology and with the equipment to examine the tissues. Arizona hospitals are constantly becoming better able to complete the requirements for post mortem studies.

In addition to the laws mentioned by Dr. Regan, there is now a law (reported elsewhere



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in this Journal) which provides for an Anatomy Board and for the regulation of cadavers for dissection. This law, originally House Bill No. 83, contains one reference to post mortems. It states that there shall be certain exceptions to the rules which require reporting and delivery of corpses,—"Nothing in this Act shall be construed to prevent any hospital, duly incorporated college or university or any duly licensed physician, surgeon or dentist from acquiring by gift or otherwise from persons having lawful authority to dispose of the same the dead

body of any human being for the purpose of post mortem examinations, dissection or other scientific use."

The availability of a cadaver for dissection is equally as valuable as an autopsy in the education of a medical student. It is wise for Arizona to have the enabling laws in case a medical school should become possible. Meanwhile the answer to many medical problems, and one of the greatest aids to post-graduate medical education, is the autopsy—but you have to take the trouble to get permission for it.

## TOPICS OF CURRENT MEDICAL INTEREST

### RX, DX, AND DRS.

By GUILLERMO OSLER, M.D.

The newest sensation in the commercial vitamin ranks ('Hadacol') has the same old appeal as the tonics in great-grandfather's day. . . . It was worth a chuckle in 1930 to find a dozen bushel-baskets of old tonic bottles in the attic of an ancient bow-roofed house on Cape Cod. All of the bottles had well-known patent medicine names, and all had one common ingredient—a 10 to 20 per cent content of alcohol. . . . Now a liquor commissioner near Chicago has ruled that licensed liquor stores, not drug stores, must handle Hadacol, since it contains 12 per cent of the stuff.

After a recent paragraph about the late DR. FENNER of Tucson, a few more pieces of data were sent in by a Sister from St. Mary's Hospital. . . . Dr. Fenner joined the Staff there in 1885—a long time ago in this area. Actually, about fifteen years after Custer's massacre, and during the presidential years of Cleveland . . . Dr. Fenner drew the plans for the older portions of St. Mary's including the circular Sanatorium building, erected in 1900. Dr. Meade Clyne worked with him, and Dr. C. A. Thomas is said to have taken over the Southern Pacific work from him in 1919. . . . The later development of the S.P. facilities would be a story in itself. Dr. Thomas should write it.

No one should be surprised when medical terminology is obscure. Now and then, however, a term pops up which is unfamiliar, but some one knows it well enough to write an article about it. . . . Dr. George Park of Chicago tells of "A Case of Simulated Dyslexia" in a pediatrics journal. Not just 'Dyslexia', but SIMULATED dyslexia! . . . The case was that of Junior, in a

mental and emotional snarl because of parental demands. So, he developed READING DIFFICULTY. . . . Another small item of amazement,—the Wesley Memorial Hospital in Chicago has a Dyslexia Memorial Institute.

A medical trade journal states that 'NUISANCE FEES' are a poor idea. Charging for a telephone call in order to discourage patients who are overly nervous, or 'free-loaders,' can cause ill-will which overbalances the value. . . . The Rocky Mountain Medical Journal believes that the physician who uses them takes a notable chance.

The Commercial Solvents 'Reporter' tells of the value of ORAL PENICILLIN THERAPY. It is said to be effective, convenient, and economical. . . . Twenty to 30 per cent of the ingested drug is absorbed into the blood stream. Keefer is quoted on the dosages effective in several infections,—Gonorrhea—100,000 U. twice a day. Erysipelas—200,000 U. three times a day. Scarlet fever, tonsillitis, otitis media—200,000 U. three times a day. Staphylococcal infections—400,000 U. three times a day. Pneumococcal infections—200,000 to 400,000 U. three times a day. Vincent's Angina—200,000 U. three times a day.

THE AMERICAN ASS'N. FOR THORACIC SURGERY produced several points of interests this spring. . . . Segmental resection of the lung has reached the point where a Saranac group removed six wedges from one patient. . . . 'Muroid impaction' of the bronchi is a newly named clinical entity, reported from Dallas. . . . Resection of an upper lobe with a thoracoplasty at the same opera-



tion has numerous advantages, says an Oregon surgeon (confirming Samson of San Francisco). . . . Pulmonary function changes are not predictable after pneumonectomy, show increasing limitation after thoracoplasties, are surprisingly severe after intrapleural pneumothorax, but are scanty and stable after extra-pleural pneumo and oleothorax.

The promise which ACTH provides for those miserable patients with chronic dermatitis (and for their depressed physicians) looms up as a grand relief. Remember those scaling, swathed and faceless wretches with exfoliative dermatitis in the large hospital wards? With pemphigus? With psoriasis? Or even those people with recurrent contact dermatitis? . . . They say the effect is thru protection of collagen in the skin; in blocking of hypersensitiveness; in suppressing inflammatory reactions.

So you took up medicine because you liked it, or to make a living? Think again: it's not so simple. . . . Dr. Bernard Strauss reports in the New York State Journal of Medicine that the individual's reasons are as follows.—1. Prestige-hunger. 2. The need to be authoritative. 3. The need to be omniscient. 4. The need to 'Do Good'. 5. The need to be loved. 6. The need to rule, dominate, subjugate. . . . Only one or two of these seem kindly and respectable reasons—but maybe Dr. Strauss was motivated by Numbers 2 and 3.

Note from the Michigan State Medical Journal, Livestock bitten by RABID CARNIVORES are unlikely to develop the disease and may be safely slaughtered within one week, or after six months. The only risk is to the handlers of the live animal or carcass, not to the consumer.

ARIZONA MEDICINE articles are used in other publications with increasing frequency. . . . Abbott's beautiful 'What's New' makes a spread out of the use of diethylstilbestrol for threatened abortion, recently reported in our journal by Karnaky.

The Pfizer Company reports that aureomycin may or may not be of value in proved cases of HERPES SIMPLEX. Too few cases, so far. . . . Aureomycin and chloramphenicol and a placebo had the same lack of effect on HERPES ZOSTER, tho it modified and shortened the pustular stage.

Ebert of Minneapolis, on emphysema.—Patients with SEVERE EMPHYSEMA may become dependent on oxygen. This is in part due to the relief obtained, but also is in large part psychological. There is no evidence of true addition.

About a year ago it was mentioned here that experimental work was being done at St. Luke's Hospital, Chicago, on ACTH in DISEASES OF THE LIVER. . . . Several months ago Webster of New York demonstrated a permanent regeneration of the injured liver in several types of disease after use of ADRENAL CORTEX EXTRACT. . . . Side effects were common, but the repair and the improvement in CH-protein metabolism make further study worth while in cirrhosis and hepatitis. . . . It may be wise to use purer materials, but the results from the extract allowed the drug to be stopped, in this small series, in contrast to the use of cortisone and ACTH.

Austrian and seven colleagues from Baltimore experimented with DOSAGES OF PENICILLIN IN LOBAR PNEUMONIA. . . . They have found that cases which were given 300,000 units of sodium G penicillin intramuscularly on the first dose (plus Benemid to delay excretion) and then 300,000 U. plus Benemid by mouth every 12 hours, did just as well as when all of the penicillin was given I.M. . . . This should interest Dr. Cambier of Tucson who helped Dr. Tillett, on the first work of its kind, several years ago in New York.

Lynch and Karon have told of a successful TREATMENT OF WARTS, especially plantar warts or those around nails. . . . They use an ointment composed of formalin in aquaphor. The lesions are treated twice a day by the patient, shaved twice a month by the physician. . . . Anyone having professional contact with formaldehyde is excluded from treatment to avoid the hazards of sensitization.

A side effect of AUREOMYCIN and TERRAMYCIN results from the very broadness of their spectrum—and from the limitation of even the broadest. . . . When you aim a drug at a virus or coccus in the bronchi, you KNOCK OUT THE COLIFORM BACTERIA IN THE INTESTINAL TRACT. . . . As previously mentioned here, a monilia infection may occur in its wake, but more commonly one may simply have gas, cramps, and diarrhea.

Dr. Most and his colleagues have reported that Terramycin is 100 per cent effective against AMEBIASIS. They suggest simultaneous mass treatment in hospitals and institutions where the incidence is high.

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## REPORT OF THE DELEGATE

House of Delegates, American Medical Ass'n.  
Atlantic City, N. J., June 11-15, 1951.

The annual session of the A.M.A. in Atlantic City had a registration of 28,398 persons—12,229 physicians and 16,167 guests and others. This compared with a total registration of 23,777, including 10,241 physicians in San Francisco last year.

The House of Delegates met on June 11, 13 and 14. Several important announcements were made to the House by the Chairman of the Board of Trustees and by the President, Dr. Henderson, during the opening sessions.

Dr. Louis H. Bauer, Chairman of the Board of Trustees, was elected to the office of President-Elect. During the meeting of the House of June 11, he announced that the Board of Trustees "being duly cognizant of the necessity of seeking and, if possible, anticipating the needs of the public, has decided to appoint an advisory committee of *laymen* to give advise to the Board of Trustees on problems in the field of medical care and to present the viewpoint of the general public. The Board intends to appoint individuals, representatives of lay fields, such as industry, labor, agriculture, education, the legal profession, and the clergy—who who are not engaged in politics and are so outstanding that their opinions will automatically receive respect."

In his report to the House, Dr. Henderson announced that the Campaign Coordinating Committee, and the Board of Trustees had decided to terminate the National Educational Campaign at the end of this year. But the House of Delegates apparently believed such a move too dangerous at this time because, immediately, several resolutions were introduced urging the Board to retain Whitaker and Baxter for another year. The Board of Trustees acted favorably and on the final day of the House meeting, announcement was made that the public relations firm would serve thru 1952 on a part time basis. The Campaign Coordinating Committee was retained also, and will be headed again the following year by Dr. Henderson.

Dr. John W. Cline, San Francisco, was inducted into the office of President of the A.M.A. for the ensuing year. His inaugural address was broadcast to the nation over two national networks. His address dealt almost exclusively

with the A.M.A., its aims and objectives. To have heard him, one could not have helped but feel proud that he was part of such a truly American institution, democratic in organization, and dedicated to high purposes.

Dr. Dwight H. Murray, of Napa, Calif., will succeed Dr. Bauer as Chairman of the Board of Trustees. He has been on the Board for some years, and Chairman of several important committees of the Board, including the Legislative Committee. Dr. David B. Allman, Atlantic City, was elected to the Board to fill the unexpired term of Dr. Bauer, and Dr. Walter B. Martin, Norford, Va. was re-elected to the Board for another five years.

The House of Delegates acted upon many resolutions, and a complete summary of its actions have appeared in the June 30 and July 7 issues of the A.M.A. Journal.

A review of the action of the House on some of the more important resolutions will be briefed in this report:—

1. Adopted a resolution which supports federal financial aid to medical schools for construction only, based on the formula of the Hill-Burton Hospital Construction Act.

2. Authorization to expand the A.M.A.'s Physician Placement Service thru which many communities may obtain assistance in obtaining the services of a physician.

3. Adoption of a resolution which urged a "thorough investigation" of activities aimed at indoctrination of students in grammar school, high school and college with the insidious and destructive tenets of the welfare state."

4. Approved a report from the Board of Trustees which stated that a Joint Committee of the American Medical Association, the American College of Physicians, the American College of Surgeons, and the American Hospital Association had been appointed, to draft a basic plan for the cooperative program in the field of hospital standardization. This group is called the Joint Commission on Accreditation of Hospitals. Basically, this Commission will have three representatives of the A. C. of P., three from the A. C. of S., six from the A.M.A. and six from the Amer Hospital Assoc; with the way left open for the Canadian Medical and Hospital Associations to have representatives on the Commission, since both Colleges and the American Hospital Assoc. number Canadian members in their organizations.



The Joint Commission on Accreditation of Hospitals will formulate standards, determine the type and scope of inspections, allocate hospitals for inspection to the several participating organizations, maintain records and award all certificates of accreditation. Inspections will ordinarily be made by the field staffs of constituent organizations and may be combined with other inspections made by these organizations for other purposes, such as approval for intern and resident training.

The Regents of the A. C. of P., and the A. C. of S., have approved the proposal for the establishment and financing of the Joint Commission on Accreditation of Hospitals. Similar consideration of the proposal will be given by the American Hospital Association at its annual meeting in September, 1951.

The Reference Committee on Medical Education and Hospitals in its report to the House discussed the various problems relating to hospital standardization, and made several suggestions to the Board of Trustees in its further study of this problem, so that the best interests of all divisions of the medical profession will be amply protected. The reference committee was especially anxious that general practitioners be represented on the voting body of the A.M.A., and that an advisory committee be formed consisting of representatives from all the scientific sections of the A.M.A. This committee called attention to the desirability of having inspections, discussions and accreditation from the point of view of the medical professional aspects of hospital care be carried out only by the medical representatives on the Commission, and that the Board of Trustees convey this philosophy to those representatives after the Commission has actually been formed. As a step to implement this suggestion, the reference committee recommended that the voting power of the Commission be re-arranged as follows: three representatives from the A. C. of S., three from the A. C. of P., four from the A.H.A., and eight from the A.M.A.

5. The House approved announcement of the Board of Trustees relative to the expansion of the A.M.A. Public Relations Department. Mr. Leo Brown, formerly Public Relations Director for the Medical Society of Pennsylvania, has assumed the office of Executive Director. Also, an advisory committee to the Director of the Public Relations Department, composed of exe-

cutive secretaries or public relations directors of eight constituent state medical associations, has been appointed. Ohio, Indiana, Michigan, Colorado, California, Oklahoma, Wisconsin, and New York have representation on this Advisory Committee.

6. The House adopted the report of the Reference Committee on Amendments to the Constitution and By-Laws relative to establishment of Single Membership Classification in the A.M.A. Several resolutions were introduced relative to this matter, which provided for equal rights and privileges by all active members, and eliminating "Fellowships" upon application, acceptance and payment of \$5.00 extra dues in addition to the \$25.00 each active member pays for membership in the A.M.A. The reference committee approved in principle the content of these resolutions, especially as to eligibility of membership to take part in organizational and scientific programs of the A.M.A. without the necessity of other than regular membership, and this report was adopted. However, the Committee felt that there is a definite question of the advisability of abandoning the term "Fellowship," and recommended that this matter be referred to the standing committee of the House on Constitution and By-Laws, with instructions to prepare such changes in the By-Laws, in consultation with the Board of Trustees, as may be necessary to carry out these recommendations.

7. Approval was given to resolutions dealing with Emergency Medical Service, such as established by many county medical societies for the purpose of rendering better community medical service and public relations to the effect that Specialty Boards be requested by the A.M.A. to facilitate participation of its members in these emergency call services by assuring them that they may participate in such a community activity without jeopardy to specialty rating.

8. A resolution presented by the State of Mississippi was reworded and adopted to the effect that the Immediate Past Five Presidents of the A.M.A. be seated as members of the House of Delegates with right to vote. Final adoption of this idea will have to lay over until the next meeting, since it involves a change in the Constitution and By-Laws.

9. Reworded and adopted a resolution reaffirming the present policy to publish in the Journal of the A.M.A. considered discussion of

controversial medical matters submitted by member physicians. This was done specifically in order to allay the criticism of certain minority groups who allege that the editorial policy of the Journal does not allow them to publish their views concerning several areas of disagreement with A.M.A. policies.

10. The provisions for the adoption of Dues in the A.M.A. was finally adopted in the Constitution and By-Laws. The following are the essential points which will govern the questions of Dues.

A. Annual dues may be prescribed for the ensuing calendar year in an amount recommended by the Board of Trustees, and approved by the House of Delegates. Dues will include subscription to the Journal.

B. The Board of Trustees may excuse a member from payment of dues for the following reasons, provided he is fully or partially excused from payment of local dues by his component and constituent association.

a. Members on whom the payment of dues would work a financial hardship. This fact to be certified to by the secretary of the member's component society.

b. Members retired from practise.

c. Interns and residents during the first five years following their graduation, except that the time spent in military service may be excluded in calculating the five-year limit.

d. A member temporarily in the Armed Forces. Dues will be remitted and prorated Jan. 1 or July 1, following the date of the member's entrance into military service.

e. Members over 70 years of age may be excused, on request, from payment of dues regardless of local dues exemptions.

11. The Chairman of the Medical School Educational Fund, Dr. Henderson discussed at length the progress toward implementing the fund of \$500,000 announced by the Board of Trustees at the Cleveland Session last December.

He reported upon future plans to augment this fund, and announced that several substantial gifts had been received. One gift which caused prolonged applause before the House

was that of the National Womens Auxiliary, which presented Dr. Henderson with a check for \$10,000, representing approximately one fourth the income of that group for the year. Doctors over the land were urged to send in their individual contributions to this Fund, earmarking if they desire the School of their choice to receive their gift.

As pointed out by Dr. Henderson, we, in the medical profession, for two and one half years past, have devoted a great deal of time and energy to our battle against the advocates of socialized medicine. He reminded his listeners of the basic, long range of our objectives, to promote the national health through scientific activities, to foster and maintain high standards of medical practise, and to solve health problems in a manner most conducive to the public welfare. The A.M.A. now has a wide range of interests and programs based on positive objectives. One of the recent steps, of course, has been to take the initiative in attempting to help our medical schools out of their financial difficulties by the creation of the Educational Fund. It was announced that the American Medical Education Foundation was merged May 16, with the National Fund for Medical Education, of which Mr. Herbert Hoover is honorary chairman. The A.M.A. Educational Fund committee will continue its efforts to raise money from physicians, medical organizations and others in the field of medicine, while the National Fund for Medical Education will concentrate its money raising efforts on lay groups, business, industry and all other potential private donors outside the medical associations.

It was a pleasure for the Delegate to serve again in the A.M.A. House of Delegates as your representative from Arizona. It was a busy week of activity, attending the meetings of the Council on Medical Service, of which I am a member, representing the western section of the country, the meetings of the House, and as a member of the Reference Committee on Amendments to the Constitution and By-Laws of the A.M.A. Mr. Robert Carpenter, our Executive Secretary, was in attendance at the meeting, and was observed with his note book at each meeting of the House.

Respectfully submitted

Jesse D. Hamer, M.D.

## ANNOUNCEMENT

### *Regional Meeting of the American College of Physicians*

The third annual Arizona Regional Meeting of the American College of Physicians will be held in Phoenix at the Westward Ho Hotel on Saturday, September 29, 1951. Dr. Dwight L. Wilbur, Clinical Professor of Medicine at Stanford University School of Medicine will be the guest speaker and official representative of the Board of Regents of the College. The program will begin with a luncheon at 12:30 followed by the scientific program to which all physicians are cordially invited, without fee. A dinner meeting for members of the College, wives, and guests will be held in the evening at which Dr. Louis N. Katz, Chicago, President of the American Heart Association will be honored guest.

The program for the afternoon scientific session is as follows:

- 1:30 Intermittent Positive Pressure Breathing Therapy; W. Roy Hewitt, M.D., F.A.C.P., Tucson, Arizona
- 1:50 Causes of Failure in the Medical Treatment of Peptic Ulcer; Dwight L. Wilbur, M.D., F.A.C.P., Clinical Professor of Medicine, Stanford University, School of Medicine, San Francisco, California
- 2:20 Direct Venous Pressure in Chronic Heart Disease; Morris Deitchman, M.D., F.A.C.P., Veterans Administration Hospital, Phoenix, Arizona
- 2:40 Intermission
- 3:30 Dynamic Effects of Cardiac Arrhythmias Louis N. Katz, M.D., F.A.C.P., Director Cardiovascular Department, Michael Reese Hospital, Chicago, Illinois. President, American Heart Association
- 3:30 Cancer of the Lung in Patients with Chronic Pulmonary Disease; Israel Walzer, M.D., F.A.C.P., Veterans Administration Hospital, Whipple, Arizona
- 3:50 Primary Carcinoma of the Liver; Joseph Bank, M.D., F.A.C.P., Phoenix, Ariz.

It is hoped that all physicians attending the annual session of the Arizona Heart Association, and other interested physicians, will plan

to attend the afternoon scientific sessions of the College of Physicians.

Leslie R. Kober, M.D., F.A.C.P.  
Governor for Arizona

## PSYCHOTHERAPY MEETING

### IN GENERAL MEDICINE HELD AT GRAND CANYON, ARIZONA—Oct. 3rd, 1951

This meeting is being sponsored by the Coconino County Medical Society and is primarily a regional meeting of the five Northern County Medical Societies. There will be one subject for this entire day, namely, Psychotherapy in General Medicine. It will be informal and to a large extent round table discussion following brief presentations by guest speakers.

We expect to have Dr. Hale Shirley from the Stanford University School of Medicine and Dr. Henry Cyril Schumacher who is Regional Consultant in Mental Hygiene and Psychiatry in the United States Public Health Service. Dr. Salsbury of the State Health Department will act as moderator.

Physicians who wish to come on October 2nd, may write Leo Schnur, M.D., Grand Canyon, Arizona and I will arrange for reservations. Registration will start at 10 o'clock October 3rd. This will be followed by luncheon and the program will last from 1:30 to 4:30 p.m. Arrangements are being made for a dance after the meeting.

Leo Schnur, M.D.  
President, Coconino County Medical Society

## ARIZONA HEART ASSOCIATION

The Arizona Heart Association is giving the following program at the Hotel Westward Ho on September 29th, 9:30 A.M. This will be followed in the afternoon by the program of the Arizona College of Physicians.

- 1) Dr. Louis Katz—"Recent Trends in Clinical Electrocardiography"
- 2) Dr. John C. Jones—"Congenital Heart Surgery"
- 3) Dr. Louis Katz—"Recent Developments in Atherosclerosis."
- 4) Dr. John C. Jones—"Mitral Valve Surgery"

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Naturally it is not possible to have USAF medical installations readily accessible to our personnel in every geographical location. In those locations where we do not have such facilities, it is necessary to depend on other governmental or civilian agencies for these services. These agencies include medical and dental services of the Armed Forces (Army and Navy), and other federal agencies, such as the Veterans Administration and the United States Public Health Service. When medical and dental services of government agencies are not available, care may be obtained from civilian sources at no expense to the individual, provided such care is a necessity and an emergency. Only active duty Air Force personnel on duty, leave or informal leave (pass status) or those people stationed where no other military or federal medical installation is available may utilize civilian medical care at Air Force expense. USAF military personnel absent without official leave (AWOL) are not authorized civilian medical care, but can receive treatment at any military installation. Depends of active duty Air Force personnel are not authorized civilian medical care at Air Force expense.

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3. Inclusive dates of treatment if hospitalized, otherwise, date and place of treatment.
4. Diagnosis.

5. Charges (itemized separately for services, drugs, x-rays, etc.).

6. A statement certifying that the bill is correct and just; that payment has not been received; that the services rendered and the medicine furnished were necessary; and that charges do not exceed those customary in the vicinity.

Payment for medical and dental service properly submitted from civilian sources to USAF military installations will be accomplished promptly after receipt of necessary authenticated vouchers. The civilian physician is advised to send the bill for services rendered directly to the Commanding Officer of the nearest Air Force Base.

## SECRETARY LULL'S LETTER

*Editor addresses Conference of Presidents.*

One of the best speeches delivered at the recent A.M.A. session in Atlantic City was entitled "An Editor Views Medicine." It was delivered before the Conference of Presidents and Other Officers of State Medical Associations by Edwin F. Abels, publisher of the *Lawrence, Kansas, Outlook*, and past president of the National Editorial Association.

"It has been said before, and I only repeat it, freedom in this nation is being poisoned," he told the conference which was attended by an overflow crowd. "It is sick unto death. The editors of the papers I represent have known this fact and have been concerned about it. It never occurred to them to call in the doctor to help cure this case of poisoning. Foolishly, they kept calling on the politicians, some of the very men who were mixing the libation. What a thrill it was when you men walked in, unannounced, and told the world to count you on the side of freedom, liberty, private initiative and all of the privileges and opportunities that have contributed to the greatness of this nation. Yet it was the natural thing for you to do. History tells us that yours is a profession built by men of courage, vision and greater intellect. . . .

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## BOOK REVIEW

Handbook of Nutrition—2nd Edition.  
Prepared under the auspices of the Council on Foods and Nutrition of the American Medical Association. Reprinted from the Journal of the AMA with additions. 7 Charts; 28 Tables; 35 Figures; 717 Pages, May 9, 1951. \$4.50. Blakiston.

This handbook includes 28 articles by 32 authors, and has 4 parts. Part I discusses proteins, fats, carbohydrates, minerals, vitamins. Part II takes up food needs of adults, infants, women during pregnancy and lactation, old age, illness. Part III treats of food imbalance, starvation, fluids, lack of vitamins and minerals. Part IV assesses American diets, plant and animal foods, emergency rations, and how to improve quality in cheap staple foods.

The book bulges with references, at least 1473, many with several sub-references. Here is an impressive array of recent research, even though much of it conflicts. Facts, or at least experiments, abound. In that lies the book's merits and defects. A busy clinician will tend to get indigestion from the very wealth of uncorrelated facts.

At times we run into interpretation of facts, not always fortunate. For example on P. 413 an author seems to say that weight alone may serve as a good criterion of nutrition. Hasn't he heard that overweight often gives the first sign of partial starvation? As well decide the value of a doubtful piece of gold by merely weighing it.

Yet in the introduction we get some hints of basic problems. We read the almost wistful admission that hucksters in advertising do more to decide food habits in American than all the doctors lumped together. Also a shy awareness that all may not be well with our food. Modern man developed until this century living almost entirely on unprocessed or slightly processed foods. But today doctors and patients alike engage in a stupendous if little noted gamble. We stake our whole future on a gamble that the human species, till almost yesterday living on unprocessed or slightly processed foods, can survive and meet all challenges on a diet of highly processed foods. Quite a tribute to the wisdom of the processors.

It may be our gamble will pay off. Perhaps it will not. For better or worse, in 1951 many prominent nutritionists in America feel that our national eating habits are not too bad. His-

torians and doctors of 2000 A. D. kindly take note.

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## WOMAN'S AUXILIARY

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### WOMEN'S AUXILIARY CONVENTION REPORT JUNE 1951

The twenty-eighth Annual Meeting of the Women's Auxiliary to the American Medical Association was held in San Francisco, June 10th to 15th, 1951. As in several past years, the attractive Hotel Haddon Hall was the scene for the women's meetings. Fifteen hundred and seventy-eight women representing their auxiliaries in all forty-eight states, the District of Columbia, and Hawaii were registered.

As this large group, delegates, members and visitors met, again and again, at round-table discussions, meetings, and luncheons, there was no question that they were well aware of the role they were expected to fill, both as individuals, and members of the community, and as doctor's wives. Perhaps Mrs. Howard P. Hamman, state president of Pennsylvania, keynoted this feeling best, when she said in her state report, "Personal freedom cannot endure without individual responsibility."

The Monday sessions were built around a series of round table discussions, of which one of the most interesting and pertinent was the one on the magazine "Today's Health." Mrs. Joseph Kelso presided at this session and Mr. Cargill who is circulation manager of the magazine spoke. He emphasized the value of the magazine in bettering the health of the American people, and pointed out that it was a great aid to the overworked doctor because it taught the patient to understand his problems and to cooperate more effectively. Inasmuch as our husbands, through national channels of the A.M.A., urge us to sponsor sales of the magazine, he pointed out it behooves all of them to buy it for their offices! The suggested techniques of selling were excellent, not only because they increased circulation, but because they carried our message to many areas where it was most needed. Thus, it was proposed, auxiliaries could present their Senators and Representatives with gift subscriptions. The same for schools, colleges, libraries and PTA groups. One state auxiliary even makes it a point to keep the magazine or health literature with our viewpoint in the stands of railroad and bus stations!

Tuesday morning was spent in the colorful opening ceremonies of a large convention, with official greetings and welcome to officers, and reports. Mrs. Herold as president read a truly inspiring report which will probably appear in a subsequent issue of this bulletin. How well she labored in our behalf was attested, not so much by her own words, but by those of state auxiliary presidents each of whom told of how Mrs. Herold had visited in her state, showing great tact and experience as she put forth our national program and guided us through individual and regional problems. Thousands of miles were spent crossing and recrossing the country in what was an arduous but compensating year.

The afternoon session was varied in its scope, with many of the Eastern and North Central Auxiliaries reading their state reports at this session. This procedure continued for three days to include the reports of all the presidents and many had to be halted before the end of their excellent reports because of the time element. The competent report of our State President, Mrs. Ben Herzberg, was read for her by Mrs. Lawrence von Pohle, and we can say with pride that for our size as a state and our membership, we stacked up well with the other states, and can rightfully boast in addition that Mrs. George Enfield's report on "Today's Health" in our State Medicine won national recognition!

During the same afternoon session, under legislation, the pitfalls inherent in many of the bills sponsored by the government were discussed. Among those to watch is Senate Bill 445 which is a Local Health Unit Bill that is very vague in its wording but delegates unrestricted power to the Surgeon General's office. Mr. Priest has improved the bill for further presentation in by Congress more clearly defining who has what powers; but the bill is still dangerous because of its back door entree of the government into the province of private medicine.

Senate Bill 337 with its Federal Aid to Education, likewise seems innocuous enough until one analyzes that one of its provisions would give up to 40% of the needed income of Medical Schools from government sources. This bill has the approval of the American Legion and the National Grange, which are usually alert to break-downs in the laissez faire system, but apparently do not seem yet aware that the joker

in this bill lies in the fact that 40% donation or grants may well make the government the single agency able to dictate all the terms for running medical schools unless again its scope and power is officially defined and limited.

There are many exhibits that we members of the auxiliary can avail ourselves of for our own, or public meetings that will further our message according to Mr. George Larson who is assistant director of the A.M.A. Scientific Exhibits. These include technical and scientific exhibits, a movie on babies, and one on nurses.

Our national President, Mrs. Arthur A. Herold, presided at the Wednesday session. Mrs. Ross P. Daniel read the touching Memorial Service. This meeting was a long one with the revisions committee report of Mrs. Eustace Allen calling forth much discussion and clarification. This was due to the fact that for the first time in history, the National A.M.A. has decided on a policy of physicians paying dues to National in order to be eligible for local and county membership. In line with this policy it was therefore necessary to make the membership of the wife contingent on the husband's compliance with the national ruling. The revisions had the benefit of full floor discussion until it was felt everyone understood and was in complete agreement. Though the procedure was tedious, the membership was impressed with how it represented democracy in action. All the revisions passed as recommended, with the one exception that the requirements for a Director were relaxed to require only that she have fulfilled a term as State President, or have held a National office or chairmanship for one year, in order to make more women eligible for this office.

Mrs. Jesse Hamer,—our Clarice—reported as National Historian and again "did us proud" as she showed her firm grasp not only of the principles for which the Auxiliary stands, but of what every state president had incorporated in her report!

The final day of the general sessions again had its note of formality with final convention reports of attendance, nomination and election of officers. These follow:

President ..... Mrs. Harold F. Wahlquist  
Minneapolis, Minn.  
President Elect ..... Mrs. Ralph Eusden  
Long Beach, Calif.  
First Vice Pres. .... Mrs. Leo J. Schaefer  
Salina, Kansas

Second Vice Pres. .... Mrs. Mason G. Lawson  
Little Rock, Ark.

Third Vice Pres. .... Mrs. Herbert W. Johnson  
Everett, Washington

Fourth Vice Pres. .... Mrs. Jay G. Linn  
Pittsburgh, Pa.

Treasurer ..... Mrs. George Turner  
El Paso, Texas

Constitutional Secy .... Mrs. Jay Emerson Noll  
Port Jervis, N. Y.

Again Arizona came to the fore, as Mrs. Jesse Hamer, with tact and charm, installed the new officers, and Mrs. Rollo Packard presented the diamond-studded pin that is the insignia of this high office. Mrs. Harold Wahlquist replied feelingly, of her desire to follow in the footsteps of her predecessors, and the need for all of us individually as well as collectively to work together. Her address will likewise follow in a subsequent issue of the Bulletin, so we shall not give it here.

The Convention was inspiring for its hard work, and long hours, but the famous Boardwalk gave occasional surcease as wives and delegates thronged it, window-shopping, visiting inside the many bazaars and stores. The bracing salt air provided a nice memory for us returning to the Arizona summer time. And the hospitality of the city, with Mrs. David B. Allman, as General Chairman, surpassing herself, in the courtesy provided,—the many luncheons, and fashion show, culminating in the final ball. To her and her able committee go our thanks for a convention, not only well done, but graciously done.

Arizona's delegates to the Convention were: Mrs. Jesse Hamer, Mrs. George Enfield, and Mrs. Joseph Bank from Phoenix; Mrs. Lawrence von Pohle from Chandler and from Tucson Mrs. Jackman Pyre and Mrs. John Rupp. The above report is a composite of the reactions, notes, and impressions of these delegates.

Mrs. Joseph Bank, Editor

#### ATTENTION WOMAN'S AUXILIARY MEMBERS

Kindly mail the following form on a postal card or in an envelope with your CORRECT ADDRESS to Arizona Medicine, 426 Heard Bldg., 112 N. Central Avenue, Phoenix, Arizona.

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## EXCHANGE OF TELEGRAMS

April 3 1951

Editor Journal of the American Medical Association

535 North Dearborn St. Chicago

My attention has been called to the President's Page in March 31 issue Journal American Medical Association. It quotes sentence from what you mistakenly call a "Current" pamphlet, describing it as "Mr. Ewing's directive" any reputable scientific periodical verifies statements before publication. Elementary check would have revealed that pamphlet was written and issued in 1945, some two years before I became Federal Security Administrator. Checking would also have revealed that this pamphlet is not being currently distributed by Federal Security Agency, and has never had remotest authority as directive. Since you profess to be a scientific magazine interested in truth I suggest you retract the statement as publicity as it was made in the first place.

Oscar R. Ewing Federal Security Administrator  
Federal Security Agency Wash. D.C.

April 11, 1951

The Honorable Oscar R. Ewing  
Federal Security Administrator  
Federal Security Agency  
Washington, D. C.

We have your telegram of April 3, protesting a reference in the Journal of the American Medical Association, to a pamphlet issued by your office titled: "Common Human Needs, an Interpretation for the Staff in Public Assistance Agencies," from which I quoted the following passage: "Social Security and public assistance programs are a basic essential for attainment of the socialized state envisaged in a democratic ideology, a way of life which so far has been realized only in slight measure."

We note your denial of responsibility for the pamphlet on the grounds that it was published in 1945 before your tenure as administrator of that office. This denial, as you request, will be duly reported in the Journal. You are correct in assuming that as reputable scientific periodical it is the habit of this Journal to verify statements before publication. The facts concerning my reference are these.

The pamphlet in question was reprinted for distribution by your office in 1949, when the public record indicates you were in charge of the Federal Security Agency, its publications

and its directives to employees. Five copies were received in the mail here last week, which indicates certain currency still. These all carry the imprint, "Government Printing Office, 1949." The fact that the report was first printed in 1945 would not seem to alter the further fact that you apparently have thought well enough of it to have it reprinted in 1949.

We would suggest that if you wish at this time to disavow the principles expressed in the pamphlet, you will wish to do so in a formal statement to Congress, for as recently as February 26 this year, it was protested on the floor of Congress as a grave misuse of taxpayers' money to disseminate wholly unamerican philosophies.

In case it was without your knowledge that your office was reprinting and distributing such Unamerican directives during your tenure, you may wish to issue a public statement disclaiming responsibility for the material. If so, we shall certainly be glad to be helpful in giving such a statement further distribution through the Journal, for the medical profession will be sincerely interested in any such action.

Elmer L. Henderson, M.D., President  
American Medical Association  
535 North Dearborn, Chicago

## PERSONAL NOTE

Dr. Harold Wood will take leave of absence from his positions in Phoenix for a year commencing September 1, 1951, to accept an Associate Professorship in Pathology at Baylor University Medical College, Houston, Texas. His private laboratories will function as at present while he is away, and he will be available for consultation on tissue sections. Professional advice will be available to the laboratory staff through one of the local Pathologists.

## NEWS ITEM

A revised catalog of motion pictures available through the Committee on Medical Motion Pictures is now available. Copies will be sent to the secretary of each county and state medical society. This catalog lists sixty-two 16mm. films, most of which are at the professional level. Fourteen of these films are suitable for showing to lay groups. Eight new films have been added. Copies are available upon request from:

Committee on Medical Motion Pictures  
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535 N. Dearborn St., Chicago, Ill.



## NATIONAL EMERGENCY

The Joint Committee on Medical Education in Time of National Emergency, in cooperation with representatives of the Surgeons General of the branches of the Armed Forces and of the Public Health Service, the Selective Service System, the Veterans Administration, and the National Security Resources Board, has for the past six months been studying and has reported to the N.S.R.B., means for meeting the needs of the country for doctors in an acute and prolonged emergency through the thorough training of as large a number of well selected physicians as possible. The Joint Committee came into being as the result of studies which each organization has been making since the last war. The Committee has full confidence that thus a number of marked deficiencies in the training and utilization of doctors during World War II will be avoided in the present emergency. It has prepared a statement for the N.S.R.B. which is attached to the present testimony.

On the basis of this study the Joint Committee is desirous of registering approval of H.R.2811 as contrasted with H.R.1752 and S.1 and S.1 amended.

The Joint Committee is especially pleased by the omission from H.R.2811 of the provision for the temporary deferment for study or research of 75,000 students annually upon completion of an initial four to six months basic training, which was included in sub-section d, section 6, page 9 of H.R.1752. We commend strongly the inclusion instead of the new amendment to sub-section h, section 6, which on pages 14-15 of H.R.2811 states as follows:

"The President is authorized, under such rules and regulations as he may prescribe, to provide for the deferment from training and service in the Armed Forces, or from training in the National Security Training Corps of any or all categories of persons—whose activity in study, research, or medical, scientific or other endeavors is found to be necessary to the maintenance of the national health, safety, or interest: *Provided*, That no person within any such category shall be deferred except upon the basis of his individual status: *Provided further*, That persons

who are or may be deferred under the provisions of this section because of their activity as students, shall remain liable for training and service in the Armed Forces or for training in the National Security Training Corps under the provisions of section 4-(d) of this Act until the thirty-fifth anniversary of the date of their birth."

Inclusion in H.R.2811 of the above new wording of sub-section 2, section 6, to permit the President to authorize deferment of students for study and later military service has the following advantages over sub-section d, section 6 in H.R.1752:

1. If activated, it will avoid a period of double duty for students of medicine and other professions. H.R.1752 provided that the temporary deferment of 75,000 students annually should be operative only until June 30, 1954—a three year period. After 1954 all men reaching the age of 18 would serve on active training and service in the armed forces for a period of 27 consecutive months, in which would be included, at the beginning, a four months period of basic training. After this period of military service, students would then be able to go to college, subsequently to medical school. After graduation from medical school, it appears altogether probable that the requirements of the armed forces of this country would necessitate a second period service, this time as physicians, for all physically qualified medical school graduates. The same would apply for dentist, engineers and other professions. This kind of selective obligation to double duty of certain groups of society, as contrasted with the rest of the age group, is undemocratic, wasteful, and would probably tend to discourage people from entering the study of medicine and other professions.

2. It will avoid limitation of deferment to a specified number, 75,000, which in practice might well work out to be in insufficient number. The Joint Committee is on record as recommending deferment of a pool of college students of high general competence for each year, from which would be selected medical students, dental students, physics students, engineers, linguistic and cultural experts, etc. We recommend the procedure reported by the six Scientific Advisory Committees—the Trytten Report to the National Director of Selective Service System, dated December 1, 1950, in which it is recommended that a student whose aptitude is such

Statement of Dr. Stockton Kimball, Chairman, Joint Committee on Medical Education in Time of National Emergency. Filed with House Armed Services Committee in regard to H.R.2811 (War Manpower Bill).

Reprinted from The A.M.A. Washington Office.



that it is deemed necessary that his preprofessional or professional training be continued in order to increase his potential value to the national health, safety or interest, be placed in a classification or category that will permit him to continue his education. We believe that a student qualifying for such classification should be so classified before or at the time he reaches the age for induction and that his basic military training and service be postponed until his specialized education is complete, or until he ceases to pursue his education satisfactorily. This procedure would be in accordance with sub-section h, section 6 of H.R.2811.

In the plan suggested by the six Scientific Advisory Committees, the scores on classification tests and the level of past achievement used as the basis for this classification could be readjusted periodically to provide for a larger or smaller pool of students, depending on the Nation's need for manpower in various categories. The advantage of such a plan is that the selection of students remains in the hands of those most fitted to exercise these functions—the colleges and the universities themselves. Similarly the selection of medical students should remain in the hands of the medical schools. It was clearly demonstrated in World War II that selection of medical students by representatives of the armed forces, rather than by the individual medical schools, led to the selection into medical schools of many less well qualified students.

3. It will avoid interruption of studies for a period of four to six months of basic training. Such interruption would result in a loss of valuable time, a loss that, because of schedule adjustments in the colleges might exceed by several months, the actual period of training. This period, whatever its length, represents a deviation in time and effort which might better be spent in the educational program. Further, if students should be required to be inducted and to go through basic training before discovering whether they are to continue their studies, it is likely that the uncertainty of their future course would seriously distract many of them from their work for at least a year preceding their induction. It will be possible for certain of these students to enroll in an R.O.T.C. program and therefore to obtain basic military training during their period in college, or in summer vacations.

4. This Bill obligates such deferred students to later training service in the Armed Forces, or for training in the National Security Training Corps until the thirty-fifth anniversary of the date of their birth, thus insuring that they will receive *deferment* for education, not *exemption* from military service.

The Joint Committee is in favor of the provision for an R.O.T.C. or similar Corps, as provided in sub-section d, section 6 amended in H.R.2811. We do not favor the provision adding a period of one year to the obligated active commissioned service of any person who has agreed to perform such obligatory service in return for financial assistance while attending a civilian college. We do not believe that students receiving such aid should be obligated for service over and above that expected of their fellows.

We are concerned that under H.R. 2811, all able-bodied men, by virtue of assignment to the reserve components of the armed forces, after completion of their initial service, will be subject to the control of the military for a long period of years.

We have been impressed by the recommendation presented to your committee by the Scientific Manpower Advisory Committee of the National Security Resources Board that a National Scientific Personnel Board or some similar agency be established. We strongly concur with that Committee's observation that, following a program of Universal Military Training and Service, there will gradually accumulate an entire generation of reservists and that some effective machinery for insuring that these individuals will serve in the manner which contributes most to the strength of the nation should be devised. A National Scientific Personnel Board or similar agency is vitally needed if we are to secure the proper distribution of reserves with special training between civilian and military needs.

## MEETING NOTICE

The Third Annual Meeting of the SOUTHWESTERN SURGICAL CONGRESS will be held at the Hotel Jefferson, St. Louis, Missouri, on the dates of September 24 through 26, 1951. Reservations may be secured by writing direct to the hotel. Registration will begin at 12:00 Noon on Sunday, September 23, and at 8:00 A.M. on each succeeding day. (There will be a \$10.00 Registration Fee for non-members of the Southwestern Surgical Congress, only.)

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# Chloromycetin®

CHLOROMYCETIN's world-wide reputation stems from its ability to produce rapid clinical response in a wide variety of infectious diseases—bacterial, viral and rickettsial. Numerous reports and the experience of daily practice confirm its

*clinical efficacy • high tolerance*  
*wide spectrum • high blood levels*

CHLOROMYCETIN, a pure crystalline compound of definite molecular structure, is the only antibiotic produced on a practical scale by chemical synthesis. This unique feature means unvarying composition for dependable therapeutic results, freedom from extraneous material, and infrequent side effects.

CHLOROMYCETIN (Chloramphenicol, Parke-Davis) is supplied in Kapseals® of 250 mg., and in capsules of 50 and 100 mg.

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# Meat...

Outstanding Value...

## Outstanding Nutritional Benefits

Whether the pocketbook calls for economy or permits satisfaction of that urge for the fanciest cuts, meat gives your patients full value for their money. Every cut and kind of meat supplies, *in abundance*, these essential nutrients:

1. Biologically complete protein... the kind which satisfies the requirements for growth and which is needed daily for tissue maintenance, antibody formation, hemoglobin synthesis, and good physical condition.
2. The essential B complex vitamins, thiamine, riboflavin, and niacin.
3. Essential minerals, including iron in particular.

In addition to these tangible values, meat ranks exceptionally high not only in taste and palate appeal, but also in satiety value.

The instinctive choice of meat as man's favorite protein food has behind it sound nutritional justification.\*

\*McLester, J. S.: Protein Comes Into Its Own, J.A.M.A. 139:897 (Apr. 2,) 1949



The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

**American Meat Institute**  
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